DOCUMENT RESUME

ED 249 291 TM 840 651

AUTHOR Sattes, Beth Dankert, Ed.
TITLE Effective Schools Are America's Best Bet: Summary and Proceedings of the AEL Regional Forum (1983). AEL Occasional Paper 011.
INSTITUTION Appalachia Educational Lab., Charleston, W. Va.
SPONS AGENCY National Inst. of Education (ED), Washington, DC.
PUB DATE Dec 83
CONTRACT 400-83-0001
NOTE 167p.
PUB TYPE Collected Works - Conference Proceedings (021) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC07 Plus Postage.
DESCRIPTORS Computer Managed Instruction; *Computers; *Computer Software; Educational Trends; Elementary Secondary Education; Evaluation Methods; Futures (of Society); Microcomputers; Personnel Evaluation; *Research Utilization; School Districts; *School Effectiveness; *State Programs
IDENTIFIERS Appalachia Educational Laboratory WV; New Jersey; North Carolina; Tennessee; West Virginia

ABSTRACT

the 1983 Appalachia Educational Laboratory (AEL) Forum brought together educational researchers and practitioners to learn from one another by sharing their innovations, successes, concerns, and progress in utilizing research and development to promote excellence in their state and local education agencies. Two thematic strands: (1) applications of effective schools research and (2) effective applications of technology in schools, were carried out through nine presentations. The keynote address, by Shirley McCune, provides an overview of future directions for education. Examples of applications of school effectivenss research are described by Donald McNeely (New Jersey Education Association), Jack Sanders (Appalachia Educational Laboratory), J. R. Brendell and others (North Carolina), Catherine Prentis and Jim Oakes (Tennessee), Charles D. Duffy and others (West Virginia), and Joseph C. Basile and others (Ohio County, West Virginia). Applications of technology are described by Vicki Cohen (evaluating educational software), Nelson Towle and others (computer use in Florida schools), and Mary Lovern and others (computerized instructional management system in Lynchburg, Virginia). (BW)

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Effective Schools are America's Best Bet: Summary and Proceedings of the 1983 AEL Regional Forum

Edited by:
Beth Dankert Sattes

AEL Occasional Paper 011

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Effective Schools are America's Best Bet:

Summary and Proceedings of the 1983 AEL Regional Forum

Edited by
Beth D. Sattes

December 1983

Educational Services Office
Appalachia Educational Laboratory, Inc.
Charleston, West Virginia

The Appalachia Educational Laboratory (AEL) is located in Charleston, West Virginia. It's mission is to improve education and educational opportunity for persons who live in the primarily non-urban areas of its member-state Region. AEL accomplishes its mission by:

- documenting educational problems of the Region and sharing the information both with member states and other R & D producers;
- identifying R & D products potentially useful for solving the documented problems and sharing information about these with member states;
- providing R & D technical assistance and training which may include adapting existing R & D products, to lessen documented problems of the Region; and
- continuing to produce R & D projects of national significance in the areas of Lifelong Learning, School/Family Relations, Basic Skills, and others that may be identified.

Information about AEL projects, programs and services is available by contacting the Distribution Center, Appalachia Educational Laboratory, P. O. Box 1348, Charleston, West Virginia 25325.

The project presented or reported herein was performed pursuant to the Regional Services Contract (400-83-0001, P-6) from the National Institute of Education, U.S. Department of Education. However, the opinions expressed herein do not necessarily reflect the position or policy of the Appalachia Educational Laboratory or the National Institute of Education, and no official endorsement by the Appalachia Educational Laboratory or the National Institute of Education should be inferred.

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INTRODUCTION

The Appalachia Educational Laboratory (AEL) was established in 1966 as a non-profit corporation dedicated to improving education and educational opportunity throughout the AEL Region. AEL can be viewed as a linking agency or as the juncture between educational researchers and educational practitioners. The linkage is two directional in that practitioners gain access to new knowledge, products, and programs of developers; and researchers learn about the R & D needs and interests of practicing educators.

AEL holds a contract with the National Institute of Education to operate a Regional Educational Laboratory (REL). Each REL services a particular region of the country. AEL's member states include Alabama, Kentucky, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. Four additional states are served by AEL's Regional Exchange, the sponsor of the 1983 Forum; they are Florida, Georgia, North Carolina and South Carolina.

As a regional laboratory, AEL conducts long-term educational R & D in several program areas. The areas of research are identified by state and local educators through a Regional needs assessment process. Another function of AEL, carried out by the Educational Services Office (ESO), is to provide R & D-based services to educators throughout the Region. One such service is the 1983 Forum; another is this report of the proceedings. The Forum brought together educational researchers and practitioners to learn from one another by sharing their innovations, successes, concerns and progress in utilizing R & D to promote excellence in their state and local educational agencies.

The Forum topic was initially identified by ESO Advisory Committee members. The two thematic strands, (1) applications of effective schools research and (2) effective applications of technology in schools, were carried out through nine presentations, attended by over 200 participants. Appendix A contains the workshop agenda and a list of participants, including presenters.

The title of the Forum, "Effective Schools are America's Best Bet," comes from a program of that name sponsored by the National Association of State Boards of Education, the American Association of School Administrators, the National Education Association, and the Council for Educational Development and Research (CEDaR). As a part of the "Best Bet" program, free clinics will be offered at state and national meetings to present research findings and to suggest methods of implementing R & D-based school improvement programs. AEL's "Best Bet" program brochure has been included in Appendix B of this report.

Organization of Forum Proceedings

The Forum was co-sponsored by the West Virginia Department of Education. In his welcoming remarks, Dr. Roy Truby, West Virginia State Superintendent of Education, highlights the timeliness of the 1983 Forum. The National Commission on Excellence in Education had just released their report, A Nation at Risk, the first of several state and national publications demanding excellence in education.

The keynote address, delivered by Dr. Shirley McCune, provides an overview of future directions for education. Dr. McCune combines school effectiveness research with applications of technology, to suggest that changes in the world call for a restructuring of our current educational system.

The remaining presentations are divided into two sections: applications of school effectiveness research and applications of computer technology in education. State presenters are listed in the order in which they spoke. Copies of presenters' handouts are contained in Appendices C through I.

ACKNOWLEDGEMENTS

This publication was made possible by the Forum presenters. Their participation not only contributed to the success of the Forum but also assured the value of this document to those interested in educational quality. I have certainly learned a lot from them in working to put their spoken words into written ones.

Many others at AEL have helped in the publication process. I want to especially thank Mabel Lee, Carolyn Luzader, Sinette Newkirk, Sandra Orletsky, and Jack Sanders.

Beth Sattes
Educational Services Office

WELCOMING REMARKS

- Dr. Roy Truby, State Superintendent of Schools, West Virginia Department of Education

Education is on the minds of people once again. It's an exciting time. Even with budget cuts, and all the problems that we face, you can see it turning around. Let me give you an example. Just one year ago, there was no federal role for education; there was no federal agenda--no concern about education. There was talk about vouchers and reduced appropriations; restructuring authority, giving more back to the states; tax credits; and a constitutional amendment for prayer. There was no talk about human investment. And that has turned around. You hear both parties, and nearly all the governors, talking about education as part of an economic recovery program. You hear about education to help meet the demands of competition in an international economy. You even hear about education for survival--education as important to defense and maybe inseparable from it.

I don't know for sure what has changed it; I think it's a combination of a lot of things. Perhaps it's the idea in Megatrends that we're moving from an industrial society to an information society. Companies today don't need so much to consider transportation; the only thing they really need is an educated workforce. I think it's very timely that we have received a National Commission Report: A Nation at Risk. As a result, we have our critics; but notice it's a different kind of criticism. It's taking a constructive form. A year ago, when we talked about salaries, people would say, "Teachers should be ashamed to ask for more. They have an easy job." Now the critics are saying, "We're going to expect more; we're going to have to pay more."

President Reagan, who saw no federal role for education a year ago, proposed $50 million for math and science: NDEA II. The Republicans in the Senate Caucus increased that to $600 million. From the Commission's Report, let me mention one sentence that struck me: "History is not kind to idlers." They talk about longer school days and a longer school year, and it occurred to me that the most controversial decision the State Board ever made was to add 15 minutes to the school day.

As we look at this plan, and at what is happening, it's an exciting time; expectations are up. We've gone through that period of reaching out and trying to provide equal educational opportunity, and now we're looking at quality educational opportunity for all.

I would like to congratulate you on your theme, "Effective Schools Are America's Best Bet." There is an increasing body of knowledge about effective schools and a much better idea about why some schools are more productive and better than other schools. Some of you may have read last month that the State Board of Education asked us to come up with a plan for merit pay--very controversial indeed. One of the approaches that we're going to look at is merit pay for a school building unit. If a school was determined to be an effective school, everyone would receive merit pay--from the principal to the lowest paid custodian.

I congratulate you on your conference. I greet you on behalf of the State Board and on behalf of the State Department of Education, and wish you well. Thank you very much.

Megatrends: A Forecast for America in the 80's

Dr. Shirley McCune is Vice-President of the Naisbitt Group in Denver, CO, and President of Learning Trends.

In her presentation, Dr. McCune highlights some of the trends identified in John Naisbitt's best seller, Megatrends: Ten New Directions Transforming Our Lives. She discusses the implications for education, that is, the ways in which education will need to be restructured in order to match the changes in today's society; and she presents strategies for implementing change. "These megatrends establish a context which impact education. Planning should be guided by Naisbitt's comment that 'it is easier to ride a horse in the direction that it is already going.' These trends provide a starting point for examining the needs for the restructuring of education programs, policies and practices. Our tasks must be to anticipate the likely impact of these trends on education, develop strategies for utilizing or counteracting their impact and developing action efforts which can lead to positive outcomes." The following paper "Building Effective Schools: Direction for the 1980's," was prepared by Dr. McCune as a hand-out to participants.

An Economic Context for Education

There is general agreement that one of the critical issues facing the United States today is the maintenance and renewal of an economic system which can meet the needs of the American people. The United States, long a leader in world productivity and the establishment of a high standard of living, is now confronted with four major structural changes in our economic system:

The United States economic system has become part of a global economic system and our future is inextricably bound with the economic systems of other nations.

- After more than three decades of rapid technological growth and innovation, the United States economic system has been dramatically restructured from an industrial economy based largely on manufacturing, to an information economy based largely on service and information activities;
- The United States economic system has become part of a global economic system and our future is inextricably bound with the economic systems of other nations;
- United States productivity and growth has declined over the past 15 years and other countries are closing the gap between their productivity rates and U.S. productivity;
- Our future economic and social well-being will depend, in large measure, on our ability to continue to provide the "cutting edge" technology for the rest of the world and

demonstrate the ability to move a product quickly into production and go on to the next generation of products.

If the United States is to respond to the urgency of these changed conditions, it will require an economic renewal program of a magnitude seldom seen in U.S. history. Such an economic renewal program must be built on a competitive strategy which will enable U.S. business and industry to provide high-quality products at prices which are equal to or better than other world producers. This is increasingly difficult in that other countries can exploit their resources of raw materials, cheap labor, or available capital in any form of competition.

The primary resource which the United States must rely on is a basic increase in productivity.

The primary resource which the United States must rely on is a basic increase in productivity, that is, the ability to use technology to create more in less time and the ability to develop new processes, products and knowledge. United States workers must demonstrate the ability to work smarter, faster and better than other nation's workers.

Perhaps the central need for designing any program of national economic renewal is the need to develop competitive strategies or plans which can deal with the complex issues in any successful renewal program. A competitive strategy for economic renewal must confront the need for increasing our international markets, for continued and expanded technological research and development, for the retooling of a decaying industrial plant, and for increased productivity.

A central strategy for each of these needs is to increase the performance of America's workforce. A critical resource and component of any economic renewal plan is our education and training systems and their ability to provide the workers who can work smarter, faster and better. Increased involvement in technological applications requires a workforce capable of dealing with more sophisticated machines and equipment--a workforce that is capable of problem solving and collaboration. It also requires a workforce that is capable of understanding and using technology and participating in decision making which requires a basic scientific and technological literacy.

Education and training become central activities for economic development. High quality education and training systems are not a luxury in our global, information society; they are a necessity.

In short, education and training become central activities for economic development. High quality education and training systems are not a luxury in our global, information society; they are a necessity for being able to compete with other nations for world markets and maintaining our standard of living.

Just as there is a need for the restructuring of the economic system, there is also a need for the restructuring of education and training systems. The ultimate outcome or mission of improving and restructuring our education and training systems includes:

- significantly increasing the pool of highly trained mathematicians, scientists, engineers and computer scientists needed to advance technology and technological applications essential for economic growth;
- significantly increasing the general levels of knowledge and skills of the total population which can increase productivitity in all areas, provide a sufficient supply of technicians for high-technology activities; and prepare a population capable of consuming information-related services;
- extending our capabilities for lifelong training and for the retraining of groups within our population whose jobs are gone; and
- raising the levels of human capability and productivity (human capital) in ways that maintain and extend equal opportunity and access for all groups within the population.

The restructuring of public elementary and secondary education programs requires a national commitment and the active involvement of leaders at state, local and national levels.

Achieving this level of restructuring will require the involvement of all areas of education--postsecondary education, training systems, vocational education and community education programs. The basic building block for a restructuring program begins with public elementary and secondary education systems. Their success is essential to extend the goals and achievements of education at other levels.

The restructuring of public elementary and secondary education programs requires a national commitment and the active involvement of leaders at state, local and national levels. The restructuring requires:

- establishing goals, directions and expectations for educational achievement and mastery of knowledge and skills;

- increasing the quality and quantity of time devoted to educational and learning activities through extension of the school day, the school year, and the more effective involvement of parents and community learning resources;

- encouraging academic excellence and achievement by measuring continuing individual mastery and improvement of skills rather than artificial time and age requirements;

- improving the quality and quantity of educational personnel through the attraction of capable persons into the education workforce, the continuing upgrading of knowledge and skills, and the measurement of effectiveness according to objective measure of student mastery and achievement;

- improving the management of education programs by increasing the skills of educational administrators, providing recognition and rewards for improved management, and utilizing exemplary management skills and processes currently used in business and industry;

- developing and implementing models which can involve business-industry, community institutions, mass media, computer networks and home instruction systems in more systematic and collaborative efforts to improve learning;

- increasing the reward and recognition for exemplary education service by providing additional pay, incentive pay for student achievement, developing "excellence recognition programs," and increasing the psychological and learning rewards of education careers;

- providing the financial resources, technical assistance and support systems necessary for the improvement of education systems.

The task of bringing about the necessary changes in education at the levels needed for economic renewal is not easy. It will require dedicated leadership at state, local and national levels which is aware of the needs and committed to finding those solutions which are in keeping with the diverse state and local responsibilities for the provision of education. And it will require a continuing attention to the monitoring of equal access and the correction of identified problems.

The Societal Context for Educational Change

The need for some examination of the societal context for change begins with a restatement of the basic, paradoxical functions of education in any society. Education must:

- maintain the knowledge and experience of the past and transmit it to the youth as a means of their basic preparation for adult roles--in this sense education is a conserving or conservative institution;

- anticipate the future, and design and select knowledge, experiences and skills which will be essential to youth's participation in a future society--in this sense education provides a means to facilitate social change.

The fact that our society produces 1,000 lawyers for every 100 engineers and that Japan produces 1,000 engineers for every 100 lawyers suggests a difference in orientation and values between the two societies.

Education programs always reflect the values and the goals of a society. The fact that our society produces 1,000 lawyers for every 100 engineers and that Japan produces 1,000 engineers for every 100 lawyers suggests a difference in orientation and values between the two societies. Educators must understand the larger social context and values if they are to be effective in preparing students for full participation in society. Knowledge of this context is essential even when your goal is to change the emphasis and values of the larger society.

The formulation provided in John Naisbitt's book, Megatrends: Ten New Directions Transforming Our Lives, and the extension of this data base contained in the Trend Report provides us one way of thinking about the larger societal context and the implications for education. John Naisbitt's observation that it is easier to ride a horse in the direction it is already going is useful as we begin to examine the needs for change and the strategies which might be pursued as we work to restructure and improve education.

Some of the "megatrends" or consistent changes which are evident across the various sectors of the society are:

1. Our society is moving from an industrial to an information society.

   Economist Marc Porat indicates that the United States ceased being an industrial economy and became an information economy in 1963, when 53 percent of the gross national earnings were reported to be in the information sector.

Another indication of this trend is found in the employment of our workforce. In 1950, 55 percent of the paid workforce was employed in industry; today only about 18 percent are employed in industry. By contrast, 28 percent were employed in service and information jobs in 1950 and today more than 56 percent are employed in these sectors.

This shift in the nature of available jobs raises issues as to emphasis of elementary and secondary education programs as well as the context, enrollments, and support of postsecondary, vocational and continuing education programs. Many have suggested that the importance of basic skills is increased and there is need for developing new levels of the higher order skills of analysis, synthesis, problem solving and creativity.

2. Our society is moving from a centralized to a decentralized society.

Two primary events--the Great Depression and World War II--served as major stimuli for the centralization of our society. The move in a centralized society was toward big business, big government, big unions and a vertical type of organization. During recent years this trend was reversed and decentralization can be seen in the New Federalism proposals, the emphasis of block grants and a general trend to solve problems across state or local levels (horizontal structure).

Within education, this trend is evident in the increasing importance of the role of state and local governments. It can likewise be seen in the shift in emphasis from using the district as a unit of analysis to using the individual school as a unit of analysis. Greater attention has been focused on the school principal as a key educational leader.

3. Our society is moving from a national economy to a global economy.

The isolation that once characterized American foreign policy at the turn of the century is clearly a phenomenon of the past. Today, the condition of our economy depends in large measure on ability to provide goods and services to other countries and throughout the world. What happens in Central America, Iran, China, Japan and Russia and any country of the world can have a profound effect on our economic well-being and the ways we organize our lives.

In general, American education has not considered the need to prepare students for being a citizen of the global village as a priority activity. In fact, bilingual education is, in large measure, considered a deficit for students rather than an asset which can be used in productive ways. There is a similar lack of emphasis on understanding the cultures of other countries around the world. These needs are likely to lead to an increased emphasis on foreign languages and the extension of global education activities and programs.

4. Our society is moving simultaneously toward high technology and toward "high touch".

When technology is not accompanied by a compensating "high touch" aspect (those activities which contain strong elements of human response), the technology is likely to be rejected. The compensating response to the high technology of television was group therapy and the human potential movement. CB radios and "walkie talkie" systems became a national craze and they have been incorporated into our daily lives because they provide ways for many to maintain communications with other people.

This trend is evident in education in the acceptance of microcomputers. Computer-assisted instruction using mainframe or minicomputers has been demonstrated but it is not widely used because it was difficult for students and teachers to have consistent "hands-on" experiences and utilize their full capacity. The introduction of arcade games and the home computer have changed the picture dramatically.

Microcomputers are becoming an essential component of education programs and schools are under pressure to acquire them and use them for instructional, administrative and general information processes.

5. Our society is moving from an either/or to a society of multiple options.

At one point in time the choices in education were largely either/or. You were involved in academic programs or vocational programs; in private schools or public schools; in K-12 education or postsecondary education. Today, the lines are blurring and more options are being provided for citizens. Community colleges are one example of the trend to meet a variety of needs and to continue one's options for education.

Elementary and secondary education programs were typically designed to provide a consistent program for all students in the district. While some options were provided in secondary schools, the choices were comparatively limited. Today we see the magnet schools, alternative schools, and enrichment programs as examples of efforts to provide multiple options for students within the educational system. There are magnet or alternative schools for basic skills, for science and mathematics, for performing arts, for language studies, for gifted programs, etc. These are part of a continuing effort to serve the range of values and needs found in nearly every community.

6. Our society is moving from a pattern of institutional help to self-help.

A characteristic of our centralized, industrial society was the trend of looking to institutions to meet individual and societal needs. This trend was reversed as evidenced in the wellness movement, the increased use of barter, cooperative living arrangements and self-help networks.

This trend is evident in education by the rapid expansion of the use of home computers for learning and educational purposes, the expectations that individuals must fund a greater proportion of their learning costs, and the expansion of school fees.

Other trends which the Naisbitt Group have identified include:

FROM	TO
North	South
Business as usual	Accountability
Hierarchies	Networking
Economies of scale	Appropriate scale
Managerial society	Entrepreneurial society
Representative democracy	Participative democracy
Family as basic unit	Individual as basic unit
Party politics	Issue politics
Machismo society	Androgynous society

Perhaps the most important things to remember about the changes in our society are the differences between the three types of societies--the agricultural, industrial and informational societies. The following diagram ilustrates some of the key differences.

	Agricultural	Industrial	Information
Strategic Resource	Land Raw Materials	Capital	Data Information
Transforming Resource	Physical Man	Processed Energy	Conceptual Space Knowledge
Time Orientation	Past	Present	Future

It is important to note the critical importance of data and knowledge or the ability to apply information. Similarly, education and training assume greater importance because they have greater importance for all sectors of society.

These megatrends establish a context which impact education. Planning should be guided by Naisbitt's comment that "it is easier to ride a horse in the direction that it is already going." These trends provide a starting point for examining the needs for the restructuring of education programs, policies and practices. Our tasks must be to anticipate the likely impact of these trends on education, develop strategies for utilizing or counteracting their impact and developing action efforts which can lead to positive outcomes.

Restructuring and Improving Education

Any discussion of the implications of the megatrends for educational programs requires a comparison of the current characteristics of education with a vision of what types of educational programs would be needed in the future. One way to make this analysis is to identify possible changes in the goals for education, the delivery systems for education programs, the financing of education programs, the training of educational personnel, assessment and evaluation systems and community outreach programs. The following chart is provided as a beginning point for stimulating your thinking as to the probable areas of change for education. It is important to understand that the movement from an industrial to an information society does not imply an either/or type of choice, but rather that the items included in the information society lists are extensions of the past and a change in emphasis rather than an abandonment of the past.

PROBABLE CHANGES OF EDUCATIONAL EMPHASIS

Area	Industrial Society	Information Society
Goals of Education		
Cognitive Goals	Basic skills	Stronger higher order skills
	Specific training	Generalizable skills
	Right to read	Right to excel
	Unicultural	Global education
	Literacy as survival skill	Many literacies, more than one language
Affective Goals	Large organization skills	Small group skills
	Organization dependent	Independent entrepreneurial
	Single family orientation	Support group orientation
Education Personnel	Teacher as subject matter expert	Teacher helps sudents get and use information
	Teacher as standards setter	Teacher as self-concept developer
	Principal as middle manager for central office	Principal as manager, curriculum leader, staff developer and neighborhood contact
	Superintendent as professional educator	Superintendent as politican and integrated community leader with specialized education expertise
	Superintendent as status quo leader	Superintendent as educational leader and community resource developer

PROBABLE CHANGES OF EDUCATIONAL EMPHASIS

Area	Industrial Society	Information Society
Assessment and Evaluation	Diffused routine accountability/assessment	Achievement/performance accountability
	Teacher/Administrator performance measured by judgement	Data-based performance measures
	Periodic assessment	Ongoing assessment for educational diagnosis
	Teacher/administrator performance used as baseline standards	Teacher/administrator performance used for incentive pay
Community Relationships	Parent as passive consumer	Parent as participant consumer decision maker
	School district youth oriented	School district lifelong learning oriented
	School as isolated educational institution	School as community service institution
	Distinct subject matter areas	Synergistic study areas
	Student as passive recipient	Student as integral part in school community
Curriculum Areas	General, diversified	Science and math emphasis
	Print oriented	Computer literacy
	Physical education	Physical/mental well-being
Job Preparation	Single-career preparation	Multiple-career preparation
	Late skill development	Early skill development
	Distinct vocational educational program	Career/vocational education as integral part of educational community experience
Financing of Education	Institutional financed	User financed
	Public sector	Public/private sector collaboration
Delivery Systems	Total district system	Neighborhood models
	Central office oriented	School-based management
	Superintendent focused	Principal focused
	Formal board-community leadership	Informal parent-neighborhood leadership
	Business as a consumer of school output	Business as a participant
	Group instruction	Individualized programs
	District structure/standards	Neighborhood variations
	Standardized programs	Multiple option programs

Improving Educational Programs

The improvement of educational programs begins with some formulation of quality education and the goals and objectives which would support the attainment of quality education programs. There are many ways to describe quality education. The listing provided below is a preliminary formulation of the critical components of quality education.

Quality education should provide all students with:

1. A high level of proficiency in the basic skills including:

    - The ability to read and comprehend written materials.
    - The ability to understand mathematical concepts and to carry out mathematical computations.
    - The ability to understand scientific concepts and their relationship to the work and activities of our society.
    - The ability to speak and interact with others in a variety of situations.
    - An understanding of computer applications and the skills of interacting with computers.

2. An opportunity to develop higher order skills including:

    - The ability to synthesize, generalize and apply information.
    - The ability to search, retrieve and utilize information and data (learning to learn).
    - The ability to diagnose situations and to solve problems.

3. A strong sense of self-concept and knowledge of personal strengths and abilities.

4. An understanding of other nations, cultures, their languages and contributions of the global community.

5. An understanding of the world of work and a beginning level of career/vocational preparation and work skills.

Improvement programs begin with some understanding of what "works" in education. The National Institute of Education has devoted considerable effort in recent years to conduct studies which examine the characteristics of effective schools, effective administration and management and effective teaching. Some of the results of these studies are summarized below.

Effective teachers were able to allocate more time for instruction, were able to engage students in learning tasks, and engage them when they were performing at high success rates.

The findings of this research may be grouped into two areas--research and the teaching/learning process and research on the structure and management of schools. With respect to the first area, some of the findings are outlined below:

1. The amount of time devoted to academic learning varied widely. Effective teachers were able to allocate more time for instruction, were able to engage students in learning tasks, and engage them when they were performing at high success rates (allocated time, engaged time, and academic learning time).

2. The organization, planning and scheduling of activities were essential to effective classroom management. Efforts to devote time to advanced planning and preparation before the school year began, to train students into a routine of activities at the beginning of the year, and to facilitate effective group relationships among heterogenous students all contributed to effective classroom management.

In general, structured programs were more successful than individualized or discovery programs.

3. In general, structured programs were more successful than individualized or discovery programs. Effective teachers were able to:

    - structure learning experiences
    - proceed in small steps but at a rapid pace
    - give detailed and redundant instructions and explanations
    - use a high frequency of questions and overt, active practice
    - provide feedback and corrections, especially at initial stages of learning
    - have a student success rate of 80 percent or higher on initial learning tasks
    - divide seat-work assignments into smaller segments or devise ways for frequent individual monitoring of students

- provide for continued student practice (over-learning) so that students have a high success rate and become confident, rapid and firm in their learning.

Some of the findings of the improvement literature which are related to the structure and management of effective schools follow:

1. There is a strong administrative leadership, usually the principal, especially in regard to instructional goals and outcomes.
2. There is a clear school-wide emphasis on basic skills which is agreed to by all members of the staff.
3. Teachers expect that students can reach high levels of achievement and their behaviors communicate this expectation.
4. There is a system for monitoring and assessing pupil performance which is tied to the instructional objectives.
5. The school climate is conducive to learning in that there is safety, order and discipline.

When we understand the factors which account for success at the local level, we must then engage ourselves in the process of "backward mapping" or identifying the state policies and programs which can support the development, maintenance, or extension of the effective practices. It is this process which requires not only in-depth knowledge of curriculum and the structure of local programs but also the policy making and policy implementation processes of states.

Applications of School Effectiveness Research

The New Jersey Education Association School Effectiveness Training Program

Mr. Donald R. McNeely is the Associate Director of Instruction for the New Jersey Education Association in Trenton, New Jersey.

In his presentation, Mr. McNeely describes the School Effectiveness Training (SET) Program developed by the NJEA. Using school effectiveness research and principles of group problem-solving, SET allows an entire school community to participate in developing their own plan for improvement. Some of the many benefits to the program include: better staff and student attendance; greater job satisfaction and improved staff morale; increased parental support; reduced costs from vandalism, absenteeism, and remedial education; and better school management.

It's very fashionable these days to point to the decline of public schools, as if there were some time in the past when the schools really served all of the children all of the time. Folklore and fairy tales tell us of the little red school house that made academic success available to children of every economic and social class--an institution that offered immigrant children access to the fullness of American life. Today the schools are criticized by the National Commission on Excellence in Education for failure to provide academic excellence. The Commission reports that "the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a nation and as a people." They also charge that "academic excellence as the primary goal of schooling seems to be fading in American education." The charge is true. But it is by no means the whole truth nor is it a new truth. The public schools have always faded when it came to providing academic excellence to the poor--both white and black.

Current educational problems stem not from the fact that schools have changed, but from the fact that schools continue to do precisely the job they have always done....That is, they serve as the primary selector of those who will succeed and those who will fail in our society.

Current educational problems stem not from the fact that schools have changed, but from the fact that schools continue to do precisely the job they have always done. What we are seeing in our current focus on effective schools is no more than an escalation of the criticisms and the rebuttals made by school reformers, administrators, and researchers since the turn of the century. The many programs, innovations, and fads introduced over the past sixty years have simply made it easier for school systems to handle the huge number of students brought into the schools by job market requirements, civil rights laws, and compulsory attendance legislation. But we still have not changed the fact that schools continue to do the same job they have always done. That is, they serve as the primary selector of those who will succeed and those who will fail in our society.

In 1978, I read a report of Edmond's testimony to a Congressional committee on education. He said that "schools teach those they need to teach; those they needn't, they don't." And they choose not to teach the children of the poor. He also said that we know all we need to know about how to teach children to read and do math. So why haven't we been teaching all the kids? Because the schools had a job: to select those who would be winners and those who would be losers in our society.

At one time society could afford failure in the schools.... Today, however, our nation is at risk.

We can no longer afford that. At one time society could afford failure in the schools--as long as the economy had room for the unskilled worker and as long as the poor accepted without protest what appeared to be their inevitable place in America. Today, however, our nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technology is being overtaken by competitors throughout the world. In addition, there are very few jobs for the unskilled worker. And even if there were, the poor people in our country are no longer willing to accept a second-rate opportunity.

The public is redefining the purpose of public education. Not only must schools serve all children, but also they must graduate all children with salable skills. Basic skills are no longer enough. We are going to have to teach all children so that when they go to the next level, whether it be college, vocational training, junior college, or a job, they will have the skills they need.

The importance of the research on school effectiveness is that it serves as a cornerstone around which the education community can respond to the new purpose of the schools.

The importance of the research on school effectiveness is that it serves as a cornerstone around which the education community can respond to the new purpose of the schools. From the research we've learned that we can no longer legitimately blame the lack of achievement on students. Remember the term "culturally disadvantaged" from the 1960's? That term crippled the children and gave us the crutch. We didn't have to blame ourselves; we didn't have to look at the school or what we were doing; we knew that if a kid was culturally disadvantaged, he couldn't learn to read. Why? He didn't have the necessary cultural background.

Research has found that schools do make a difference. There are effective inner-city schools where students learn the basic skills with great success. Effective schools are not only well-funded, but also they are well-managed. These are schools in which there is an emphasis on academics; teachers have high expectations for what all students can achieve; there is regular, comprehensive assessment of student progress; the principal is committed to instructional improvement; the staff participates in the development of school policies and plans; there are clear goals and a strong consensus about those goals; there is regular communication between the principal and school staff, and between the school staff and parents.

The NJEA School Effectiveness Training (SET) Program has been in existence since 1979. We have been in eleven districts in two states. The SET program is based on the findings of research on effective schools. But it has another important characteristic; it's a bottom-up approach. We found that when programs start at the top and begin to trickle down, the folks at the top usually get the applause and accolades; the folks most responsible for instruction--the teachers, school staff, and principals--usually get the paperwork. I think research will show you when it comes from the top, it's not going to work. You need a sense of commitment and ownership from the people that are going to have to carry it out. NJEA's SET helps the school staff set up their own plan to bring about change in their school. The greatest resource for improving any school is the staff already working there. Successful change comes from within, and it comes from the bottom up. Much of the success of SET comes from the staff, parents, and students working together on the same agreed-upon goals.

The greatest resource for improving any school is the staff already working there.

The School Effectiveness Training Program has three components: the Pre-institute, the Institute, and the Post-institute. The Pre-institute activities consist of a program overview for administrators; discussions with school staff; and information sent to parents, school board members, PTA members, industry, and the entire community. We ask for 100 percent commitment from school administrators; if there is any hesitation or doubt on their part, we walk away. In informing the school staff about the SET program, we talk to everybody who comes in contact with school children: janitors, cafeteria workers, security people, etc. You need to have everybody involved because when you look at the expectations factor, for example, I have seen a kid walk down the hall and be told by the janitor, "Hey, dummy, pick up that piece of paper." We present the SET program to the staff, and at the end of the hour's discussion, ask for a show of hands on how many people would be interested in becoming further involved in SET. If we don't get 70 percent of the staff interested, we walk away from that school. The staff must make a commitment to give up a week-end for the program. We also inform school boards, but they are the last ones from whom we ask a commitment. We try first to develop a groundswell of commitment from the staff and administration. This encourages support by the school board. This is a community approach so we also inform parents and PTA members about what's going on. And we make every attempt to involve industry.

People have some ownership, they have some say in the program, and they're willing to make a commitment to the plan.

During the weekend training of the SET Institute, participants receive training in both the content and process of school improvement. We develop teams of about 8-15 people who represent a cross-mix of administrators, teachers, school service personnel, parents, and board members. We have found that many second grade teachers do not know the fourth grade teachers in the same school; sometimes sixth grade teachers don't talk to the first grade teachers. During these two and one-half days, we develop some camaraderie. Initially, these small groups examine the five factors that influence school effectiveness. Then the groups apply the factors to their school in a "status quo vs. ideal" process. These five factors are instructional leadership, academic mission, on-going comprehensive assessment, school climate, and staff attitudes and expections. Then the staff reorganizes into a second set of small groups, with each group concentrating on one of the five factors. They explore ways to make changes in their own school. Finally, they reconvene to develop a building-wide action plan for improving their school. The plan specifies what they want to do, how they're going to do it, and who is going to do it. Specific responsibilities are accepted by individual staff members. This is the importance of the bottom-up approach. People have some ownership, they have some say in the program, and they're willing to make a commitment to the plan.

The SET program is only the beginning. It starts some type of action in which the staff members feel that they should be involved in all areas of improvement of the school.

We developed procedures for establishing a coordinating council which continues after the week-end institute. During the Post-institute phase, the school coordinating council monitors the work of the factor groups throughout the school year and follows through on implementing the proposed changes.

Although we make no claim that School Effectiveness Training is a panacea, we are proud that it has produced benefits that fall into three categories: those affecting students, staff, and the school as a whole. These outcomes have been documented by the National Institute of Education through Research for Better Schools, a laboratory in Philadelphia.

The SET is not for everybody, because not everybody is ready for a serious self-examination. It's definitely not easy.

Outcomes affecting students include the following:

- improved motivation,
- reduced absenteeism,
- a more pleasant school environment, and
- a safer and more orderly school.

Notice I did not mention higher achievement. We are in the process of measuring that now, but we expect that it will be a long time before we show any substantial improvement in achievement.

Those things affecting staff are:

- higher morale and increased job satisfaction. You ought to go into one of our schools. Networking is beginning to take effect. The principal's in the middle and everyone else begins communicating with the principal.
- improved techniques to raise student motivation.
- fewer distractions from the mission of teaching. One of the first things we hear about from teachers is the abuse of the intercom, which interrupts teaching and takes away from the attention to teaching and learning.

SET provides the mechanism to move through change productively, using problem-solving techniques and a consensus-building model.

Outcomes affecting the school are:

- more parent involvement and parental support;
- reduced costs for vandalism, absenteeism and remedial education; and

- increased staff capability to continue to improve the program.

The SET program is only the beginning. It starts some type of action in which the staff members feel that they should be involved in all areas of improvement of the school. It results in better management, more satisfied employees, and more satisfied students.

Reactor: Ms. Cathy Spence, Graduate Student in Special Education Administration, Gallaudet College, Washington, D. C.

Ms. Spence has seen the School Effectiveness Training Program in operation, and offered a reaction to the program from the viewpoint of an outside observer.

NJEA's School Effectiveness Training (SET) Program involves more than applications of school effectiveness research. An important part of it involves team-building within a school. It is a process of putting together research findings and educators in a way in which the research is meaningful to the school building personnel.

The problem-solving process which is used in the Institute is not unique to SET. But as educators, we're not used to reaching consensus in small groups. The process helps educators learn to define problems, identify alternatives, select the best alternative, implement, and evaluate its effectiveness. During the two-day activities of the Institute, as school staff grapple with problems facing their school, a lot of enthusiasm is generated. There is no defensiveness; nobody points the finger of blame at anyone else. A spirit of cooperation develops which is very important to the implementation of the action plans.

Question: What is the role of the principal in the problem-solving process?

Answer: There is a balance in forming the small groups so that everyone is involved equally. In their discussions of the ideal (from the school effectiveness literature) versus the status quo (what is going on now), teachers are not intimidated by the presence of the principal. They want to get things out on the table. They have never had an opportunity to share their concerns like this before, especially with teachers of other grade levels.

The NJEA representatives who attend the workshop serve as facilitators. It is different from inservice because it is not done after school or on school premises. Teachers and other staff members have to give up a week-end to participate, and the school board has only to pay for lodging and meals. Even after the Institute, once they get back to the school, you have factor groups volunteering to meet after school on their own time; they don't get paid extra. But they have a commitment because they have been involved in the decision-making process. The coordinating council emerges rather naturally from the school staff; they are people who are natural leaders and are already engaged in at least informal leadership roles in the school.

Question:	What about small schools? Do you do anything differently for them?
Answer:	We are anticipating an Institute at a small rural school this fall, where the staff size is 29. Because they already know each other fairly well, we may change the format of the Institute, and we may meet in the school building. The SET is not for everybody, because not everybody is ready for a serious self-examination. It's definitely not easy. The end result is not a group of docile, very satisfied teachers. If anything, it's going to produce some conflict because people are going to be willing to talk about things that are not up to par, in their view. Change is always difficult. SET provides the mechanism to move through change productively, using problem-solving techniques and a consensus-building model.
Question:	Could you give us some examples of some of the action plans that have been developed?
Answer:	Action plans have included: more secure buildings, improved use of space in the school, cleaning and fix-up projects, new disciplinary policies, attendance policies, reduced disruptions in the classroom, curricular alignment, focused inservice programs, public recognition of achievement, joint student-teacher shows, and numerous community projects. Some of the documented benefits to schools have been: high morale, improved staff-administration relations, increased commitment, more uniform policy implementation, improved communications, increased initiative, more team-work, and better decision-making processes.

Profile of School Excellence

- Jack Sanders, Director, Educational Services Office, Appalachia Educational Laboratory

AEL takes a very positive view of education. Our version of the Best Bet program is described in a brochure. (See Appendix B). There will be a free clinic or workshop held in each of the Region's states, coinciding with a major conference. We will start with an overview of school effectiveness research; proceed with a discussion of products that are available to help schools implement the findings of that research; and conclude with information about how technology--especially the microcomputer--can be used to improve administrative effectiveness and classroom learning. This will include information about products and services available from AEL, and from other labs, centers, and agencies.

As a preview, I want to tell you about a new product available from AEL-- the Profile of School Excellence, or the PRO-S/E. It is an assessment package that allows a school district to get a handle on where it is in terms of school effectiveness. To develop the PRO-S/E, we began by looking at the literature and identifying a definition of effective schools. The four-part definition that we use tells us that an effective school is one in which:

- Achievement data does not discriminate by socioeconomic status, i.e., socioeconomic status cannot be used as a predictor of school achievement.
- Attendance is very high--over 90%.
- Vandalism and delinquency is very low.
- Level of satisfaction is high for staff, board members, students, parents, and the community.

Effective schools--and they do exist or the research couldn't have been done--exhibit certain characteristics. Using the PRO-S/E, we help a school district get a rough idea of how it's doing on those characteristics that research says are connected with an effective school. The PRO-S/E uses input from four data sources: students, principals, superintendent and central office staff, and teachers.

We ask how a school is doing on each of 11 variables.

1. NEEDS BASIS: The degree to which school personnel use an in-place system for identifying, teaching, evaluating, and remediating students' learning needs.

2. OBJECTIVES: The degree to which school personnel prescribe and communicate to students relevant and attainable objectives for each academic course.

3. EXPECTATIONS: The degree to which school personnel communicate clearly to each student, the belief (the expectation) that each can and will succeed in attaining prescribed academic objectives.

4. ROLES AND RESPONSIBILITIES: The degree to which school personnel prepare each student to assume an appropriate level of responsibility for learning, cooperate with others, and participate in a broad range of academic and non-academic activities.

5. CONDITIONS AND RESOURCES OF LEARNING: The degree to which school personnel provide students exemplary conditions of learning, that is, they group students appropriately; they present and model information and skills in an interactive way that properly motivates students; and they use excellent instructional materials to assure maximum student participation and success.

6. INSTRUCTIONAL TIME/TASK ORIENTATION: The degree to which school personnel provide students maximum instructional time during class periods and assure the students attend to and engage in academic tasks during class time.

7. USE OF ASSESSMENT: The degree to which school personnel use assessment data as the basis for informing students of their academic progress and informing teachers of their students' remediation needs.

8. REWARDS AND REINFORCEMENTS: The degree to which school personnel use an in-place system of reinforcement that recognizes the accomplishments and achievements of students and staff.

9. KNOWLEDGE OF SCHOOL CODE: The degree to which school personnel communicate clearly and enforce equitably rules, structure, routines, and consequences governing student behavior.

10. SCHOOL CLIMATE: The degree to which school personnel create and model a collegial environment in which students receive and return to those around them a sense of caring, personal concern, interest, respect, commitment, and support for persons, property, and ideas.

11. PARENTAL SUPPORT AND INVOLVEMENT: The degree to which school personnel have established procedures that encourage meaningful parental and community interest, involvement, and support in students' academic learning.

The profile forces some discussion about the difference in perceptions. (See sample profile, Appendix C.) It provides parents, teachers, and board members a place to begin to look at school effectiveness research. We don't know, as administrators, whether to begin on needs basis, conditions and resources, or where. But the profile gives us some information on where the greatest need is, or where we can begin to work. The report that accompanies the profile provides information about existing R & D-based programs that school administrators and teachers can use to tackle those areas on the profile that they consider to be most important. The report is delivered within thirty days after the administration of the PRO-S/E.

North Carolina: Performance Appraisal Program

Presenters from the state and local level give their views on the development and implementation of a statewide performance appraisal system.

Presenters include:

- Mr. J. R. Brendell, Coordinator of Personnel Services, Regional Center, North Wilkesboro, NC
- Mrs. Juanita Floyd, Director, Division of Personnel Relations, North Carolina Department of Public Instruction, Raleigh, NC
- Ms. Mary Nantz, Director of Staff Development, Iredell County Schools
- Dr. Helen LeGette, Director of Performance Appraisal Project, Burlington County Schools
- Ms. Faye Burton, Principal, Jefferson Elementary School, Shelby City Schools

In North Carolina we are in a different position than most states with reference to test scores. Contrary to what's happening in the rest of the country, test scores in our state have increased on both ends of the ability spectrum. Not only have the scores of the lower ability students increased, but also the scores of the higher ability students have increased. Between 1978 and 1982, scores of the lower 25 percent of our students increased 7.8, 8.6, and 8.5 percentage points in grades three, six, and nine respectively. During that same period of time, the upper 25 percent of our students had increases in test scores of 4.2, 4.6, and 3.3 percent.

We think the reason for this is the leadership we've had in our state from Dr. Craig Phillips, the State Superintendent, and from Governor Jim Hunt. Both have brought about a number of changes in North Carolina and are recognized nationally for their outstanding leadership cabilities. There has been a heavy emphasis on a reading program for several years; every K-3 classroom has a teacher aide; we have instituted a statewide testing program for achievement and competency; there are two governor's schools, one for science and mathematics for exceptionally bright students, and a school of arts. We have several teacher improvement programs. This summer teachers will be paid to attend institutes on writing, mathematics, and science. Our in-field certification program, which was adopted by the state board and becomes effective July 1, 1983, means that every teacher that teaches in North Carolina will be certified in the field before they teach. The quality assurance program (QAP) is a collaborative effort between a university system and state department to come up with a program that will better prepare teachers. We have increased high school graduation requirements to 22 units. These are some of the things that we think cause our state to do well on test scores and we're very proud of our school system.

In North Carolina, there are 142 school systems; 100 of these are county systems and 42 are city systems. The State Department of Public Instruction has a Raleigh Office and eight Regional Education Centers to bring services closer to the local school districts. We have consultant services in each Regional Center dealing with exceptional children, mathematics, research and testing, personnel services, vocational education, economic education, social studies, child nutrition, communications skills, compensatory education, and migrant education.

There are two other components that have affected us in North Carolina. The first is the assistance that AEL has given us. AEL invited us to become involved in the research and programs that they brought together. We looked at classroom management programs about three years ago and our state finally adopted COET and TESA. In fact in Region 7, we have had training programs in COET in 23 different schools this year. We have systems that are involved in TESA, COET, the Hunter model, and one system with the Jane Stallings model.

The other component is Chapter 2 and the changes that took place in the funding. Our State Board of Education decided that five percent of the money that came to our state would be used for incentive grants to local systems. These incentive grants were awarded on a competitive basis in three areas: prevention of student drop-out, technology, and personnel appraisal. We received over 100 proposals. Nineteen grants were issued. There was one grant funded in prevention of drop-outs, eleven in technology, and seven dealing with personnel appraisal. Of those seven, you'll hear about three very outstanding ones today.

Background and Development of Performance Appraisal

In the spring of 1980, our legislature mandated that the North Carolina Department of Public Instruction would develop uniform standards and criteria for the evaluation of all professional personnel in the public schools. The mandate required that local units would provide for an annual evaluation of all professional personnel and would develop rules and regulations to insure implementation of the process developed by the state agency.

The mandate gave us only one year to do that work and pretty early in the process we realized there was not enough time. We got permission to narrow it down to deal with teachers and principals in the first phase and we were also given some extra time. We collected information from all over the country relative to performance appraisal. We established committees to work on the process, being very careful to involve large numbers of teachers. We felt very strongly that the more ownership we could get from the teacher groups, the easier it would be to move through the whole process.

During the course of the year that we were developing materials for teachers and principals we identified the need to field-test the process before implementing it in all 142 units. We got the support of the State Board, and ultimately the legislature approved our field-testing the project. When we asked for volunteers to serve as pilots, 55 units volunteered. We chose 24, being careful to assure geographic distribution by choosing three units from each of the eight regions. We also had representation of both urban and rural districts as well as large and small units.

We developed a training package to help with the implementation. Initially our training was a four-day program. The first day dealt with the job descriptions, the instrument, and the historical background. On the second day we looked at data collection and how to deal with the data in an objective manner. The third day we presented conferencing skills, and the fourth day we put it all together and tried to hang it onto a process that was recommended to local units for their use. We did that in each of the regions for ten principals from each system. We felt that those ten could replicate what we had done and share it with the others. However, a great deal was lost in the translation and that method was not as effective as we had hoped. Before we went on to training for statewide implementation we changed our process and provided a structure for all principals. We found that to be more effective.

During the course of the year, we met with representatives from each of the pilot systems, where they had a chance to make recommendations and share their concerns, problems, and accomplishments. We ran into several kinds of problems during that year. For example, the span of control; how many people can one person evaluate effectively? How do you deal with evaluating 75 people? That's one we didn't resolve. Principals can use designated assistants to help, but because it was a new system, many of the principals wanted to do it themselves. This leads to a real need for time management and establishing priorities. If performance appraisal is not a priority of the system, and if the superintendent or the leadership does not value that activity, then it won't happen.

Another problem was the length of the instrument. We still haven't resolved that one either. There are 33 indicators and we're still doing research and will come back and do some other adjustments. Use of test scores was another problem. There was a lot of concern about whether or not to use student test scores to evaluate teachers. When North Carolina adopted their annual testing program, the legislation included a statement that test score data could not be used for the evaluation of teachers. At this time, we are not using test scores. We did collect data on it last year and have analyzed the data to compare student achievement with teacher evaluation. I don't think we're going to be taking that direction in the near future.

The issue of merit pay came up as soon as the law was mandated. Our legislature had just approved a teacher salary which involved a significant commitment of money. Part of the reason for the mandate was to assure the public that we are looking for and expecting accountability. Our division has been instructed to begin doing some background work in the area of merit pay teacher differentiation. We expect it will generate a great deal of interest and/or resistance from teacher groups in the state.

Another one of the big problems had to do with the rating scale. We started out with a five-point scale, then a three-point scale, and then the research division told us we needed a four-point scale to serve their purposes. We ended up with providing an option for local units to choose a three-, four-, or five-point scale.

The State Board adopted some general procedures that included the standards and criteria, local option with reference to the rating scale, a statement that the purpose of the evaluation was to improve instruction and to make personnel decisions, and required orientation.

We have now developed the job descriptions and criteria for media specialist, counselors, assistant principals, general supervisors, and psychologists. Those materials are being field-tested this year in fifteen units across the state and will be ready for full implementation next year. During the course of this year, we have also developed the materials for directors, coordinators, speech therapists, social workers and superintendents. Those materials will be field-tested next year and the final phase will include the support personnel groups: the aides, custodial staff, school food workers, and all of the other groups. That is not part of the mandate; those will be provided as a service as what we would like to see done.

In my opinion one of the biggest weaknesses has been that it was mandated for everybody. Many systems in North Carolina had done a great deal on their own in developing a performance appraisal system that met their needs. And in many cases they were better for them than what we developed. They can add to what the state has adopted but they must use the state system.

It has been an exciting project and I think it has already made a difference in education in our state. The potential is there for it to continue to make a real difference.

Iredell County Staff Development Program for Improved Teacher Evaluation

Our school system became interested in teacher evaluation shortly after the North Carolina tenure law was passed in 1970. As we began looking at teacher evaluation instruments, we asked the question, what is it that makes a difference between effective teaching and ineffective teaching? AEL was a big help in introducing us to the teacher effectiveness research which indicated some things that we needed to look at seriously in evaluating teachers in the classroom.

The overall intent of our Performance Appraisal Project this year has been to integrate the Hunter research that we had used during the 1970's with the North Carolina Appraisal Instrument that had been mandated. We had used our own locally-developed instrument for about six or seven years, and we needed to make a transition to this new state instrument. During the same time we had also made a transition in administration with a new superintendent and assistant superintendent.

Donald Medley tells us that there are two ways to improve the effectiveness of teachers. One is by improving the way teachers are educated, the other is by changing the way teachers are evaluated. The focus of our staff development efforts has been to develop the teacher and the principal as a team to improve instruction through personnel evaluation. One of our objectives was to strengthen administrators' skills in observation and conference techniques with the teacher. High school principals who did not feel comfortable going into a foreign language classroom felt very comfortable after we had done some staff development in the area of teacher effectiveness research, particularly during the early period with Dr. Madeline Hunter from UCLA. Their skills and self-confidence increased tremendously. Our other objectives were to find a valid, reliable, and legally discriminating performance appraisal system; to utilize the research on teacher effectiveness to develop the evaluation system; and to use the information in planning an individualized staff development program.

Medley continued that either type of changing or improving teacher effectiveness can produce teacher improvement only when it is based on accurate information about the differences in behavior. So we looked at that in our staff development program over a several year period. As we brought principals and teachers through the process, it was helpful that we were developing a common vocabulary to use in conferencing.

Lesson design (by Dr. Hunter) has been very helpful for our teachers. Our instrument deals a lot with planning, not only daily planning but also annual planning. This year we have developed some system-wide objectives for schools from the superintendent's level, with input from principals and other staff members. We have worked on developing the areas that are listed in "Factors Within a Classroom That Affect Learning" (See Appendix D.) This year we added a new component to our staff development program. We brought in Dick Manatt from Iowa State University, who has done a lot of work with the Hunter research, with classroom management (COET), and the TESA program.

During our staff development this year with principals and teachers from each school, we tried to develop inter-rater reliability on the North Carolina instrument. Over a three-day period of working through teaching episodes, our evaluations did develop greater consistency from one evaluator to the other.

We have also worked to develop alternatives for collecting information in the classroom. Our principals use the observation log (Appendix D) to do an anecdotal record as they observe in the classroom. Then they use this when they do the formative conference with the teacher or the post-conference following the formal observation. We use the North Carolina evaluation instrument at the summative conference at the end of the year.

We had a choice on the rating scale to use with the North Carolina instrument. Our school system chose a four-point scale: Unsatisfactory, Needs Improvement, Meets Performance Standards, and Exceeds Performance Standards. A steering committee made up of principals and teachers has developed a standard for each of those levels. Some sample Performance Standards, in draft form, can be seen in Appendix D. We're getting feedback from our principals and our teachers that this has been most helpful.

We do feel that we are making strides by using the teacher effectiveness research to develop a performance appraisal system that will help us improve instruction in the school system. We have principals trained so they are able to provide some valid alternatives for teachers. Our teachers respect our principals now as being instructional leaders who can provide them with valuable help through classroom observations and conferences.

Burlington City Schools

Burlington was not involved in the pilot study last year. Local personnel kept hearing about the new state performance appraisal system, and as is often the case when there is a change, there was a great deal of apprehension about the process. Teachers were concerned about whether the proposed system would affect their jobs. They were concerned about the more detailed instrument which principals would use in evaluating them. The Burlington central staff, in considering this, wrote a proposal and subsequently received funding for a project titled, "Teacher Growth through Equitable Performance Appraisal." There are two key words in the title. One is "growth." We have approached performance appraisal from the standpoint of teacher improvement, professional growth, and providing opportunities for on-the-job development. The other key word is "equitable." We wanted to carry out the performance appraisal process in as fair, as just, and as accurate a manner as possible.

The project activities during the first year focused on administrators. Teachers were concerned about consistency across schools. The teacher in the elementary school, for example, wanted to know if the teacher in the high school would be evaluated in a similar way. Would principals be looking for the same things? Would some be lenient and others be strict in evaluations? Teachers wanted to be treated fairly.

A major objective for the project, which was written as a two-year program, was to address the matter of calibrating the evaluation procedures of principals. A second objective involved designing work improvement models for our non-tenured teachers, and the third was to develop leadership models for those teachers who are considered to be outstanding. I would like to share with you the activities we have carried out this year and those proposed for next year.

To establish a research base prior to becoming involved in staff development activities, our principals rated the top 10% of their staff and the bottom 15%. Then they translated those ratings to the new performance appraisal instrument. We have done some analysis of central tendency and we have data on the indicators they used and failed to use. At the end of this year we will be looking at their evaluations of these two groups of teachers to see what changes have occurred as a result of our staff development activities.

Our administrators have been involved in numerous staff development activities. All of our principals participated in the training provided by the North Carolina Department of Public Instruction last summer. We arranged through a local industry for our middle school and high school principals to attend a three-day time management seminar. This proved to be quite helpful. The Burlington Director of Personnel and I attended a National Academy of School Executives seminar in which George Redfern and Thomas McGreal were presenters. We brought that information back for use in staff development with administrators. One of our high school principals and I attended an "Essentials of Management" workshop on performance appraisal and the various factors that need to be considered. In our in-house staff development, we had more than 30 hours of staff development with university consultants to help principals develop validity and reliability of ratings. We feel that we have only begun in that area. We videotaped teaching episodes and compared the group ratings to see if we were getting consistency across grades. Dr. Thomas McGreal from the University of Chicago did staff development sessions on teacher effectiveness, goal setting, and data collection. We have also compiled a rather impressive file of resource materials for administrators.

It was interesting to see the teachers' reactions to the training that we had provided for administrators. In one of our evaluation sessions, an advisory committee member indicated that she felt the program had been particularly effective. She indicated that teachers have more confidence in the entire performance appraisal procedure if they feel the administrators are competent and well trained. The commitment to staff development indicates to teachers that principals are concerned about being fair in carrying out the performance appraisal process.

We formed a Performance Appraisal Advisory Committee, composed of 20 teachers, administrators, and central staff personnel representing a cross-section of the school community. All grade levels and all schools are represented. This group had a voice in some of the decisions that were made. Initially our school board approved a 5-point rating scale, with the fifth category being "Superior." We heard concerns from our teachers about the "Superior" ratings. The supervisory personnel at Burlington Industries also indicated that we might have trouble with that category because it is hard to justify the difference between someone who is rated "Outstanding" and someone who is rated "Superior". We had unanimous agreement in the Advisory Committee that we should go to a 4-point scale and this subsequently became policy in Burlington. We also consulted the Advisory Committee about the forms that we would be using and they were involved in developing the indicators for each of the major teaching functions.

We prepared a performance appraisal packet which I persented at faculty meetings. This contained a letter from the superintendent giving a philosophical setting for the performance appraisal system in Burlington, some brief definitions to give teachers and administrators a common vocabulary, and samples of the various forms. We also included an observation checklist which provides a common focus so that all administrators look at the same things when they observe in classrooms.

There was concern that the principals might not have enough information to respond to some items. For example, "has this teacher served on a system-wide committee?" "What outside activities is this teacher involved in that might enhance his or her classroom performance?" To address this problem, we developed a Professional Activity Profile, an optional form which teachers may fill out, giving information about professional activities they are involved in that the principal might need to be aware of both to understand the work of the individual and also to respond to the items on the instrument at the end of the year.

We have involved teachers in staff development this year. We have just completed a four week staff development program, offered after school on an elective basis. One hundred twenty-five teachers attended, and preliminary response indicates that there are a significant number who want to participate in similar sessions in the fall. We plan to conduct COET training for a limited number of teachers; they in turn will go into their schools and train other teachers. This is an effort to build in some leadership opportunities for some of our better teachers.

We have a number of plans we hope to address next year. We are concerned with providing some professional growth opportunities for non-tenured teachers who are having difficulty. We are exploring a mentor program to match the young, inexperienced teacher with another teacher who could provide non-threatening assistance. We want to get into the area of micro-teaching to address the needs that are most outstanding. We also want to encourage participation in conferences, workshops, and other opportunities to develop leadership skills.

Our project represents a developmental approach to performance appraisal. At the heart is teacher effectiveness research, but in the developmental approach, administrators observe in the classroom with a common focus and a common frame of reference to help the teachers identify their own strengths and weaknesses. This leads to the writing of a professional growth plan and provides for assistance for those who are having difficulty or leadership opportunities for some of our stronger teachers. I found a quote by W. R. Tracy which characterizes our approach to performance appraisal. He said the real key to success in teacher evaluation is the clear demonstration by school administrators of concern for and confidence in the members of the teaching staff. That is what we are trying to do in the performance appraisal project in Burlington.

Improved Instruction Through Performance Appraisal: Shelby City and Kings Mountain District Schools.

Our project is a multi-unit one including both Shelby City Schools and Kings Mountain District Schools. During the 1981-82 school year, both Shelby and Kings Mountain served as two of the 24 pilot units to field-test the state-mandated Teacher Appraisal Instrument. We implemented the Performance Appraisal System according to the procedures set by the State Board of Education. After the training of our principals by members of our State Department, we began the cycle of orientation, formal and informal observations, pre- and post-conferences, written performance growth plans and end-of-the-year summatives for each of our teachers. This was very new for most of our principals who had gotten into the habit of using a quick checklist based on a brief classroom visit to rate the teacher's year of performance. Most of us were not used to sitting down face-to-face with a teacher, even once a year, and talking about the effectiveness of the teaching-learning situation. Locally, beginning with our pilot year our evaluation cycles are to include at least one formal observation and pre- and post-conference with each tenured teacher, and at least two formal observations for each probationary teacher along with a written growth plan for all teachers. In order to be prepared to write a growth plan for our teachers, especially for our better ones, we found it necessary to include several informal observations. Most of our teachers "put their best foot forward" during the formal observation time. When there were many items needing improvement during this time, we knew we had our work cut out for us. So, we learned that our data collection for each teacher consisted of several observations, both formal and informal. before we could attempt to write an appropriate growth plan.

As a result of this experience as a pilot unit, the possibility of using the appraisal system to facilitate the instruction for students became apparent. However, it became equally apparent that additional developmental activities were needed to help us reach the ultimate goal of improving instruction.

As principals began to implement the procedures of the Performance Appraisal System, we became aware of our need to sharpen our competencies in identifying the key practices or indicators of effective teaching and in developing performance improvement plans that would help teachers obtain skills and techniques in order to be performing more effectively. It was obvious that some of us had been too far removed from instruction for too long a time to make valuable, valid suggestions. Principals had difficulty justifying our ratings of teachers on the 33 performance criteria of the Teacher Performance Appraisal.

Another problem that surfaced during the pilot year was the lack of calibration of ratings of teachers from school to school. Some principals rated all teachers in their schools at a higher level than others did. Teachers from schools where lower ratings were used became concerned.

According to a local survey involving principals, the following elements emerged:

1. Principals indicated confidence in identifying the very strong and very weak teachers.

2. They felt confident in their ability to rate teachers in the Indirect Facilitating Functions

of the appraisal instrument. These include: human resources, human relations, and non-instructional duties.

3. Almost all principals indicated a need for help in sharpening their skills in the Particular Technical Functions, those of: managing daily instructions, differentiating instruction, individualizing instruction, and supervising instruction.

4. Under planning and oversight functions, help was needed in operating the program.

During the pilot year Shelby and Kings Mountain worked closely together (we're only 15 miles apart), sharing problems and progress. Representatives of both groups attended the scheduled meetings of the 24 pilot units and participated in panel discussions at several conferences. Our advice and cautions at each contact centered around two main themes: (1) time management for principals in order to pull off this time-consuming procedure and (2) getting principals back into the instructional leadership role in our schools.

In addition to the concerns of our principals, our teachers voiced the desire to learn how to earn better ratings on the Appraisal Instrument. Their concern, as well as the principals, was to increase the effectiveness of classroom instruction.

Herein lies the motivation for our Chapter 2 project proposal. We set our needs up into four objectives in asking for additional monies to aid our Appraisal efforts. Our overall purpose is to improve instruction for students through the use of the Performance Appraisal System. Our objectives include:

1. To develop an instructional model of effective teaching practices that relates to the elements of the Teacher Performance Appraisal Instrument.

2. To train all teachers and principals to recognize effective teaching practices.

3. To earn agreement between principals and teachers as to the elements needed to be included on individual growth plans.

4. To increase the inter-rater reliability of teachers by principals on the Performance Appraisal Instrument.

The factor most important to us in our project is to earn agreement between principals and teachers as to what good teaching is and to use the appraisal cycle for communicating strengths and needs based on agreed-upon effective teaching practices. We are aiming for the time when a principal (or evaluator) and a teacher (the evaluatee) can look at a lesson reconstruction during a post-observation conference and agree upon elements contributing to or taking away from the effectiveness of the lesson.

In order to meet our goal of training every teacher and principal to recognize and use the effective teaching practices that are addressed in the Teacher Appraisal Instrument, the following procedure has been used:

1. Since we saw no reason to "reinvent the wheel," the Administrative Committee studied already-established programs which had researched and validated effective teaching practices. We selected three for emphasis this year. These are: COET Model--Classroom Organization and Effective Teaching; Madeline Hunter's lesson design and learning principles; and TESA model--Teacher Expectations and Student Achievement.

   These three models were chosen carefully for several reasons. First, we wanted teachers to learn ways to organize their classrooms for the most effective teaching. Little learning can take place without organization, planning, and discipline. COET offered structure in this area. Next, we wanted to be sure our lessons were structured for maximum learning for our students. Madeline Hunter's program held this information for us. After we'd organized for maximum on-task time and instruction, we wanted to take a look at the affective domain of our classrooms to see how our teacher-to-student interaction was affecting our teaching. The TESA model provided what we were looking for in this area.

2. After deciding on these models, we set up initial training for members of our steering committee which includes all principals and representative teachers from each school. We also held sessions with the Bellons who had been so instrumental in our state appraisal

cycle and called on Dr. Richard Coop of Chapel Hill to help us fit the information into our Performance Appraisal Instrument.

3. The Steering Committee members who received the initial training are holding in-service activities in their own schools. In this way, all the teachers in all the schools are receiving the training given to the Steering Committee members. In each school, the principal is a viable member of the training team.

4. For each training session, books, video tapes, films, related readings, and other materials have been obtained for use by the Steering Committee members.

Each time our Steering Committee receives training, they return to their schools to share what they've learned. This has been well-received by our faculties. Since this in-service involves all members of the instructional staff, many innovative and interesting ways to absorb the information have been used. During the COET training, for example, one teacher completely rearranged his classroom based on COET principles and taught the "Readying the Classroom" section in this concrete manner. As part of the training, all our schools have developed, posted, and disseminated school rules. Each of our classrooms has developed, posted, practiced, and each teacher is consistently implementing classroom rules. Every teacher has taught a lesson using Madeline Hunter's lesson design and is committed to using this structure consistently for future lessons.

We've learned the characteristics of effective schools and are committed to increasing our time-on-task, our academic learning time. Our commitment is to proactive teaching.

We're well underway toward meeting our objectives, but time has really become a factor. It takes a lot of time for the school-based sessions since they necessarily have to be done after school. And this is the area we want to stress. We want all our teachers to be trained. Additional activities are needed to continue working on our objectives.

Tennessee's Better Schools Program

The presenters describe the ten-point Better Schools Program in Tennessee, with special emphasis on three parts: Basic Skills First, Computer Skills Next, and the Master Teacher/Master Administrator.

Presenters from the Tennessee Department of Education included:

- Ms. Catherine Prentis, Educational Specialist, Division of Research and Planning
- Mr. Jim Oakes, Coordinator, Mathematics, Computer Skills Next Program

Education is in the spotlight in Tennessee. Lamar Alexander, probably the most popular governor in recent history, turned that spotlight on education last February when he announced his proposed education legislation, known as the Better Schools Program (BSP). The ten-point program is described in Appendix E. In addition to being research-based, many of the ten points of the program constitute action called for by the Tennessee Comprehensive Education Study, which was funded by the Legislature in 1982. However, the 1983 Legislature saw fit to study the BSP for one year before considering its passage.

These moves by the Governor and the Legislature were mixed blessings for education in our state. Under the leadership of Governor Alexander and Commissioner of Education, Robert L. McElrath, personnel in the State Department of Education will be heavily involved for the next months in refining each of the ten points, and in selling some of these ideas to the public. This will be no small task in addition to the regular duties we already perform. When Legislators proposed tabling BSP, their major concern was that some of the programs had not been thoroughly explored and explained; that is a situation we intend to correct before the next session of the Legislature convenes.

Basic Skills First

Basic Skills First (BSF), the only part of the BSP already in place, was started two years ago. Those of us who were working with the program at that time directed the formation of a writing committee composed of mathematics and reading teachers, administrators and higher education people. In two weeks they wrote a reading and mathematics curriculum for grades K-8. This curriculum includes lists of identified skills, a testing program, and a record-keeping system. Basic Skills First is based on the mastery learning theory: when you identify skills so that students, parents, and teachers know what skills are to be taught; teach those skills; test to see that the skills were taught correctly; and keep records of what happened; test scores will improve. As we all know, improving test scores is the name of the game right now. We can't expect to improve our financial standing in education unless we can show evidence to the public that we are doing a good job.

The mathematics component of BSF was set up on three premises. Number one, it is not merely a listing of minimum competency skills, but rather a comprehensive list of skills that can form the core of a school's curriculum. We identified 708 skills in grades K-8. Secondly, the skills are grounded in concrete experiences. Teachers are required to have manipulatives to teach many of the skills. Number three, it is based on small steps. We looked at other curriculum guides and skills lists, and found that the steps were rather broad. We felt that was one reason many kids fail, so we identified small increments. When teachers implemented this process in a pilot program a year ago, most of them found that by the end of February they had covered all of the skills and still had time to do other things before the end of the school year.

This program is in place. It does not contain an impossible number of skills, as our pilot has shown. BSF is a voluntary program; school systems participate only if they want to. The first year we had planned to have 20 schools in our pilot, and we had 120 volunteers. This year over 800 of the 1100 elementary schools in Tennessee are in this program voluntarily. The State Board of Education ruled last month that local schools must be involved in some type of basic skills program by 1985.

Computer Skills Next

Tennessee has a serious unemployment problem. According to the Governor the answer is to create better jobs and a better work force. That is where Computer Skills Next (CSN) comes in. CSN is a computer literacy program for seventh and eighth grade students. An article from the April, 1983 issue of Electronic Learning describes the goals and objectives of the program. (See Appendix E.)

All seventh and eighth grade students will be exposed to computer literacy through fifteen hous of instruction in both grades. This is only a starting point; once the program is in place it will be expanded and modified. The state board is already identifying guidelines for the development of computer courses at the secondary level.

We expect that most of the skills eventually will be taught in the elementary schools; then the seventh and eighth grade curricula will be revised and upgraded. The original proposal was that CSN would be fully implemented by January, 1985. That has been moved ahead one year because of legislative inaction. However, because we do not lack ingenuity in Tennessee, we are beginning a pilot of CSN on a very small scale this fall. A writing committee has written the first fifteen lessons. The committee is composed of 14 people, eight of whom are seventh or eighth grade teachers who are teaching computer literacy in their own schools.

Goals and objectives were identified by a statewide advisory committee. The writing committee translated those into lessons and identified the skills to be taught in seventh grade. The other skills will be incorporated into the eighth grade curriculum. The guide was written for Apple and Radio Shack computers because those are the most prevalent models in our state. The committee did an outstanding job, and we are very excited about the future of the program. Later this summer, nine pilot schools (one in each developmental district of the state) will be identified to use this curriculum in 1983-84.

Another component of CSN is training. We are identifying 20 to 30 state department personnel to be trained as trainers. They will receive a one week training session in how to train teachers to use the materials we are developing. We are asking each school that will be involved in this project to designate one teacher as the school's resource person, the primary person responsible for the program in that school. That person will receive one week of training in the use of the materials. All seventh and eighth grade teachers will then receive a brief two-day training session to familiarize them with the program. The curriculum will be revised by the writing committee after this pilot year.

The CSN plan calls for the state to provide two-thirds of the cost of the computers; the local systems must provide the other one-third. We have recommended a ratio of one computer for every thirty students in the two grades. Using this ratio, approximately 4,500 computers will be needed. Currently, we average only one per school (about 1800) in the state. The equipment needed will include the computer itself, a monitor and one disk drive. Peripheral equipment, such as printers, will be left up to the LEA. We encouage them to have at least one printer within the configuration.

In our pilot situation, we're looking for innovative ideas for getting students through this 15 hour course. We are not encouraging the setting up of a computer class as a separate course that students attend one day a week for three weeks. We're thinking of this program being integrated into the current curriculum, not requiring additional teachers or classes. Many of our middle schools offer the exploratory, mini-course concept, which we think will work well for CSN.

Question: Do you expect to tie this to a math course?

Answer: It may be the math teacher who becomes the person responsible. We ask a school to identify a resource teacher; we make no requirements. If it's the art teacher who happens to have a computer at home, has an interest, and wants to do it, that's fine. Since each of the 15 lessons stand alone, the curriculum could be divided among several teachers. The lesson on social significance may be taught by the social studies teacher, another strand by the science or math teacher, and perhaps another strand by the librarian or the media specialist. The first five lessons cover history and social impact, and introduce a little bit about the operation of the machine. The second five lessons deal with the elements of programming, where the students learn the basic commands to operate the computer. The last five lessons deal with the application. So it's a three-pronged program.

Question: Are you going to distribute the teacher's guide to others in or outside your state?

Answer: Yes. But probably not until after we have piloted and revised it. During the initial year the guide will be distributed only to teachers who participate in the training.

Question: Are there any plans in Tennessee to include computer software in the process of statewide textbook adoption?

Answer: It is now possible to use up to 20 percent of the state textbook money to buy supplemental materials, assuming that a system has the needed textbooks. I doubt that the state board will go beyond that in providing state funds at this time.

Tennessee has addressed the issue of software for the LEAs in two ways. First, we have a state membership in MECC which enables us to provide software free to the LEAs. Secondly, the budget for the computer literacy legislation included a provision for the establishment of a state clearinghouse for software evaluation. Since this was not funded by the 1983 legislature, we are in the process of coordinating the establishment of clearinghouses on a voluntary basis. These two operations are being handled through the Division of Research and Planning and the person to contact regarding this information is Betty Latture.

Question:	Will the kids have access to the computer other than in class time?
Answer:	I would imagine that if a teacher will show up at 6:00 a.m., the kids will be there, too. The idea is that this laboratory will be accessible within the school. And that's why I say it might end up in the media center where it will be available more often to the students. Frankly, I believe the kids are going to demand accessibility to the computers.

Master Teacher/Master Administrator

The Master Teacher/Master Administrator (MT/MA) Plan is without a doubt the most controversial point of the Better Schools Program. This certification plan provides for a career ladder and incentive pay for all groups of certificated LEA staff, with the exception of the superintendent.

The plan was proposed in an attempt to address the problems we have in Tennessee--and nationwide--in regard to the availability of quality teachers in public schools. First we have a problem of supply. Since there are currently fewer 18- to 24-year-olds in the population than there were ten years ago, soon there will be a smaller group from which to draw new teachers. A lower percentage of high school seniors indicated on the ACT that they are planning to go into the teaching profession. Considering the low pay in our profession, it is not surprising that business is successfully competing for the higher calibre students. Couple those bits of evidence of an impending teacher shortage with the projected rise in elementary student enrollment (we have a higher in-migration in Tennessee) and by 1990 we will have a crisis in our classroom unless steps are taken now to reverse this trend. The Tennessee Master Teacher/Master Administrator Plan is one attempt to recruit, reward, and retain the best of our profession where they are needed most: in the classroom.

A portion of the MT/MA plan, the Interim Commission, was funded by the legislature for the purpose of establishing proposed evaluation criteria and application procedures. This was done in order to answer some of the questions concerning the working process of this certification system prior to passage of the bill. (See Appendix E for a description of the plan.)

Question: Are there any provisions for reversing the career ladder process--for a master teacher to return to the professional level?

Answer: Since the Master Teacher plan is a certification process, not an employment one, a teacher holding a master certificate may voluntarily be employed at a lower status.

Also related to this, if a master teacher is seeking recertification, and fails the evaluation for that status, he or she will revert to the senior teacher certification. Only when an apprentice or a professional status teacher fails the evaluation would he or she lose certification altogether.

Question: Where will the first master teachers come from?

Answer: The first group of master teachers will be identified by experts in observation and evaluation. The first group will then be asked to devote their full attention (take a leave of absence for which they and their school systems will be compensated) to identifying another group of master teachers. After this initial process, master teachers will devote only a limited amount of time to these observations and evaluations.

The West Virginia Department of Education Effective Schools Program

This presentation describes the process being used to develop definitions, alterable elements, indicators, and measures of effective schools in West Virginia within the context of early childhood, middle childhood, and adolescent education.

Presenters from the West Virginia Department of Education included:

- Dr. Charles D. Duffy, Director, Office of School Effectiveness
- Dr. Al Canonico, Coordinator, Early Childhood Education
- Ms. Lydia L. McCue, Coordinator, Middle Childhood Education
- Ms. Helen V. Saunders, Coordinator, Adolescent Education

Historical Background of Project

An effective school has usually been defined as one in which the same percentage of students from a lower SES and a higher SES achieve or master a certain number of minimum level objectives. We have concern about that definition as "the" definition. We prefer to look at the goals and functions of a school. Of course, a school's goals must be compatible with county and state goals. The degree to which a school reaches its goals would be indicative of its effectiveness.

Another concern is that most of the studies have been conducted in inner-city, urban, and poor or deprived areas. West Virginia does not fit that description. We need to do some validation in West Virginia to see if the research findings hold true for rural, suburban, and small city schools. Most of the research has been completed in elementary and early childhood programs. This poses a problem because the purpose of middle childhood programs (junior high schools and middle schools) and adolescent programs (high schools) differs from that of early childhood programs. The definition of effective schools may be very different depending upon the developmental level of the students.

We are also concerned because the statistical procedures used in effective schools research have been correlational. Some researchers are moving away from that, but many of our beliefs are based on correlational data, rather than on more sophisticated analyses. There are statistical procedures that can allocate the differences in outcomes attributable to certain characteristics.

In spite of our concerns about the definition, about West Virginia's being a rural rather than an urban area, and about dealing with schools K-12 and not just in the early years, we think the effective schools research is our best bet for educational improvement. Our concerns have helped structure our work and we are trying to address them in developing a program. This presentation will describe the process used to develop definitions, alterable elements, indicators and measures of effective schools in West Virginia within the context of early childhood (K-4), middle childhood (5-8), and adolescent education (9-12).

The Office of School Effectiveness was formed two years ago through a reorganization of our department in which school effectiveness became a major focus. Starting with this project in Grant County, which will be validated throughout the rest of the state, we are working with schools to develop measures of school effectiveness. We are not looking at ineffective schools right now. We are working from the premise that all schools are effective but could be more effective.

Phase One

Phase one of our project includes the developmental work in Grant County. Phase two is our follow-up work with Grant County as they begin implementation. The third phase will be state-wide implementation and application.

The purpose of going to Grant County was to develop definitions, elements, indicators, and measures of effective schools to give us some beginning baseline documents in the context of early, middle, and adolescent education. People involved in the process include those of us from the State Department, the Superintendent in Grant County, the Grant County Board of Education, and teams in four Grant County schools. We are trying to measure the degree to which the following factors are present in each school and the degree to which they impact the school's effectiveness:

- positive school climate
- instructional leadership
- high expectations
- emphasis on academics (upper grades) or basic skills (lower grades)

- frequent monitoring of pupils' progress

Our program is research-based. We began with the research of Brookover, Lezotte and others as a beginning, a place of departure. We are trying to develop a framework within the programmatic definitions of early, middle, and adolescent education, to make this a West Virginia-based effective schools process. From the research, we've identified these five alterable elements.

Within each school, there is a "school-based team." For financial reasons, we couldn't put the whole school staff on this team and pay for substitutes. Depending on the size of the school, its team has three to eight permanent members. Each team includes the principal and several key staff persons; indirectly, the entire staff is involved. We have learned that entire staff involvement is very important. It has to be a grass-roots commitment.

In order to provide a common knowledge base among the people involved, we conducted an awareness workshop. We talked generally about school effectiveness, about the five alterable elements, how they apply to a school, and how they improve a school. We did those awareness workshops first of all with the superintendent, principals, and with key staff members at the county office to see if they felt that it was something that could help them. They bought into it. The next level was a presentation to the Board. Then we took the awareness workshops to the staffs of all the schools in the county.

We asked for volunteers for the school-based team. We worried about what would happen if nobody volunteered. But fortunately, we got too many volunteers to fill the slots. Each team member has a notebook which contains some basic school effectiveness research, expectations of team members, the project timeline, an outline of topics to be dealt with, and a place inside for products. One of the ground rules was that all of our work would be based on research--not just personal opinion. Within the State Department, we developed a module on each of the five elements. As team members received Module Number One, they read related research articles and compiled a list of indicators and measures. For example,based on the research, what do you believe would work in your school to build a positive climate for learning? How could those things be measured?

We held a half-day meeting with each team on each element. They brain-stormed all their ideas. As a group they synthesized their individual ideas to come up with a school list. This process has been important in building ownership at each school. After completing a list of indicators and measures as a team, they shared this with the entire faculty.

We now have a draft of indicators and measures for each school--things that they're going to work toward over the next several years--in each of the five areas. Each school has a rather unique set of plans. A sample draft can be found in Appendix F.

Phase Two

Phase two is a continuation of our work in Grant County, dealing with ways to follow through with what we have started. At the state department, we will be developing the instrumentation that will go along with the measures identified by each school-based team. There will be some overlap among schools, but instruments will be designed for each school. We will use checklists, rating scales, interviews, and direct observation.

We will provide technical assistance to help Grant County conduct a needs assessment, using the instrumentation that we have developed. We will work with them in identifying the discrepancies between what their profiles are and what they should be. Then we will work with them to address the priority needs identified through the assessment.

We will also be working with them to develop a school plan (see Appendix F.) This year they are developing the school plan as a planning instrument; next year it will become their goal instrument. Each plan is tied into county goals, based on a county program statement.

Question: What is the time-line for Phase Two?

Answer: We envision that in the fall we would be ready to work with the instrumentation and that by the end of the school year they will be able to develop their school improvement plan.

When we look at what we are going to be doing statewide, we have plans to streamline the process. But we really feel that there is a need to get into the schools and work with the school-based team, faculty, administrators, and school board so that there will be a commitment; so that people won't let it drop after outside support is removed.

We need to look at the validation of the instruments. They are based on research and descriptive literature, but they're certainly not researched themselves. We are going to identify, based upon our definition, schools that seem to be effective and schools that seem to be less effective. We will go into those schools, administer the instrumentation, and then make a decision as to which of the indicators seem to make a difference in the schools. One of the real problems is the inter-relationship of these indicators, the reason being that the research says you really can't isolate them and that you try to work with them all together. We will use the validation to refine what we come up with in our programmatic context.

If you look at the Master Plan in West Virginia and the components of school effectiveness, instructional effectiveness, teacher effectiveness, and administrative effectiveness, you will see there are tie-ins with what we're doing. The school improvement program will also tie into the county accreditation plan. We'll also be able to identify high-need schools through this process. In the past, the targets of technical assistance from the Department of Education sometimes have been the schools that cry for help the loudest. In the future, we will have some data with which to decide which schools need help. But we won't go into a system and devote this time unless there is support from the upper levels of administration. The key ingredient of this, to be able to take it anywhere, is to train a group of trainers to go into a school system. Probably by next summer we will have materials for this training.

Implementation and Evaluation of Teacher Expectations and Student Achievement Project (TESA) in Ohio County Schools

Presenters included:

- Dr. Joseph C. Basile, II, Director of Educational Program Development, Department of Education, West Virginia
- Dr. Henry Marockie, Superintendent, Ohio County Schools, Wheeling, WV
- Dr. Merrill L. Meehan, Educational R & D Specialist, Appalachia Educational Laboratory, Charleston, WV

Description of TESA

TESA is an inservice training program for teachers of all subjects in grades K through college. The underlying premise of the program is that a student's achievement is affected, either positively or negatively, by his or her teacher's expectations and interactions. The ultimate goal is a gain in the academic achievement of all students. The program is directed toward modifying teacher behaviors in order to equalize the frequency of interactions with perceived "high" and "low" achieving students.

Participating teachers attend a series of five three-hour workshops. At each workshop, three supportive and motivating interactions are introduced. Participants become familiar with the TESA model and concepts through discussion, role-playing, group interaction exercises and lecture. Following each workshop, participating teachers make a conscious effort in the classroom to equalize the frequency of their interactions with the "low" and "high" achievers, while their behaviors are observed and coded by another participating teacher.

Introduction

The Ohio County TESA Project was the result of long-term systematic planning and goal-directed program development b personnel representing Ohio County Schools, the West Virginia Department of Education and the Appalachia Educational Laboratory. This project exhibits the productivity and quality that are possible when various agencies work together in a collaborative and cooperative venture. Each agency brings to the project its special expertise in terms of resources: human, fiscal and physical. The project provides data-based insights into instruction and learning in general. Furthermore, the project exemplifies a systematic educational staff development model which includes the following phases: design, development, implementation, evaluation and reconceptualization.

Realizing the challenges involved in a study of this nature, members of the consortium formulated a written plan that attended to all project phases and tasks. The agencies and individuals involved were willing to commit the necessary resources to assure the success of the project and the consortium. Underlying the potential for project success was the knowledge that consortium personnel held common beliefs about teaching and learning; respected each other's opinions; and had proven track records of sustained, dedicated commitment to the challenge of improving teaching and learning.

Another key aspect was the involvement of the county superintendent. Because of the superintendent's decision-making capabilities and leadership role, it is critical to include him or her on the team.

Background

Before I describe the project, I want to provide background on the school system preceding our involvement with TESA. A review of the whole issue of staff development a few years back found the following:

1. Classroom observations were not focused; much of what was looked at was irrelevant to teaching and learning.
2. There was too much reliance on one person--the principal. While we recognized the principal's importance in leadership activities, we realized that one person could not possess all the necessary information in order to make the best evaluations possible.
3. Checklists for classroom observations were not effective.

We decided that we wanted to get away from what we call the "evaluation myth," i.e., the myth that we evaluate people for the purpose of improving instruction. So we decided to stop playing games. We now have an evaluation system, called a "Plan of Assistance," which is used when a teacher is facing potential dismissal. It does not relate to the observation system of TESA, which is designed to improve instruction.

At about the same time, AEL sponsored a workshop in Ft. Mitchell, Kentucky. Of the programs presented at the "Potpourri" workshop, TESA seemed to fit our needs best because it had a narrow focus which related to teacher training, with observable outcomes in a classroom setting.

The first year three staff members participated in the training program at Shaker Heights, Ohio. They served as trainers of other teachers. We asked for twenty teachers who would be willing to participate in the workshops. Sixty volunteered! The second year 40 additional teachers were trained. Our objective is that within five years all 600 teachers in the system will have gone through the TESA program. We now have eight trainers who will work with 100 teachers next year. We don't need to spend additional money for the training of trainers.

Benefits

From my perspective as a superintendent, the benefits to any school system are as follows:

- TESA training absolutely changes classroom behavior of teachers--and they do it willingly. It's not forced on them.
- Low achievers do participate more in class. They attend school more often as a result. There are fewer referrals to the office for discipline problems.
- Teachers observe other teachers, forming a collegial relationship. They sit down with each other and review what they have observed. This is a great indirect benefit to the teachers. They get new professional ideas from one another, and it is all for the purpose of improving instruction. None of those data are used in the evaluation process of the program or of the teacher.

A capsule summary of TESA is this: it provides in-service which teachers want to participate in, it transfers directly into the classroom, and it can be observed by other teachers.

Evaluation

The purpose of the study was to conduct a comprehensive evaluation of the TESA staff development project in Ohio County, WV, during the 1981-82 school year. There were four main objectives for the design and conduct of the study.

- To assess the TESA project's impact on teachers' concerns, attitudes, and behaviors.
- To assess the TESA project's impact on students' knowledge, attitudes, and behaviors.
- To utilize the evaluation results in making data-based recommendations both to the superintendent and to the state department.
- To share the evaluation results with other educators at all levels.

Results from six of eight data collection devices lead to the conclusion that the TESA project was a success. In terms of student academic progress, as measured by the CTBS, the perceived "low" achieving students experienced more growth than the perceived "high" students. There were significant reductions in absences and in the number of referrals to the office for discipline problems. In terms of teacher behaviors, there was a significant difference between project teachers and comparison teachers in their interactions with students. The project teachers were very satisfied with the workshops, with all five receiving a mean score above 6.0 on a seven-point scale.

A complete description of the evaluation design and results are in a report, "Evaluation of the TESA Demonstration Project in Ohio County Schools," available from the Appalachia Educational Laboratory.

Applications of Technology

Evaluating Educational Software

Dr. Vicki B. Cohen is the President of Instructional Software Sevices (ISS) in Hackensack, New Jersey. ISS offers services to state departments of education, local school districts, publishers, and others involved in instructional software for the microcomputer.

Dr. Cohen's presentation focuses on the need for school districts to evaluate software materials based on their own needs. She outlines criteria which can be used in the evaluation process and presents a team evaluation model, which includes a practitioner-teacher and learner-based validation.

I would like to talk about technology. I know that this conference has been emphasizing effectiveness and excellence in education, and I think that it is extremely important that we look at the impact of technology in education. I am pleased that I will represent that aspect of education. I received a newsletter yesterday which said that by January 1983, 53 percent of all schools in the United States had at least one microcomputer for the use of instruction. That means the majority of schools throughout the country have at least one microcomputer. The implications of this are really far-reaching when you think about not only how microcomputers are affecting our schools, but also how technology is affecting all aspects of our lives today. You cannot find one profession that is not impacted by technology in some way--whether it be business, architecture, graphics, storage and retrieval for libraries and museums, or education. As educators, we have a responsibility to address the whole issue of technology and how it will affect our students. We have a responsibility to help our students become computer literate and learn the skills that they will eventually use in society.

You cannot find one profession that is not impacted by technology in some way.... As educators, we have a responsibility to address the whole issue of technology and how it will affect our students.

I would like to talk about effectiveness in the schools as it relates to the whole issue of technology. But first, I want to talk just a little bit about my background. I was a special education teacher for seven years, so I come from a background of teaching and I know how important it is to look at education in terms of effectiveness and accountability. I did my dissertation at Teachers College on evaluating software. When I first began my dissertation, I had to delay it six months because there wasn't enough software on the market. That was in 1981, and the difference between then and now is really phenomenal. There has been a proliferation of software on the market. Now, everybody is producing massive amounts of software. The market is inundated with instructional software. Schools have problems knowing what to do with this new technology, and knowing what type of software they should buy for it.

It's one thing to pick up a magazine and read an evaluation. It's another thing to really look at your own needs and set up your own inhouse evaluation projects.

Today the number one use for microcomputers in schools is computer literacy, that is, giving students skills in knowing what to do with the computer so that when they get out into the real world they have some knowledge of what microcomputers are all about. In secondary schools, besides computer literacy, the primary application is programming. In elementary schools, the major application is CAI, or Computer Assisted Instruction. That's basically what I will be talking about today. That's when a student sits down at the microcomputer, plugs in a program, and the program actually tries to teach the student how to do something. With this use of CAI, there is a need for school districts to set some rules. With all of the software that is on the market, it is important for schools to try to understand what their own needs are. Evaluations of software are available, and that gives school districts a headstart; but my feeling is that school districts should do their own evaluation of software packages. It's one thing to pick up a magazine and read an evaluation. It's another thing to really look at your own needs and set up your own inhouse evaluation projects. School districts across the country need some kind of model; they need some kind of leadership in terms of getting started with micrcomputers and with evaluation of software. They are overwhelmed and they really don't know where to turn. I think that State Departments need to take a leadership role in terms of training.

Evaluation of software has become the number one concern for school districts throughout the country.

Evaluation of software has become the number one concern for school districts throughout the country. How does a school district get started? What do they do? The most important things that a school district needs to attend to when looking at software, are those attributes that are important in the design. We need to start with theoretical, intellectual attributes. What makes a software package instructionally effective? How do we know that this software package is going to be any good? First, we need to remember that software is really another instructional material that will be used in the classroom like teachers use basal readers and textbooks. Therefore, many of the attributes of effective software are the same as those which can be attributed to any good instructional material. In my article "Criteria for the Evaluation of Microcomputer Courseware," (Appendix G) I talk about attributes that are necessary to consider. On page 10, there is a table which divides the attributes into two separate categories: those that are general to instructional materials, and those that are necessary for the design of courseware. Those that are necessary for good instructional materials are those we have heard about before. Is the target audience specific? Are the rationale and goals stated? What are the objectives? Do the objectives include just plain recall or do they aim towards a higher level where the students have to use synthesis and comprehension? How is the instructional text formatted? Is concept learning employed? Those are all generic to the instructional design of materials that will be used in the classroom.

There are also attributes that are specific to courseware.

- What is the curriculum role? Is it going to be adjunct or will it be used as a basic course? Will it be used for management? When I talk about a management system, I mean using the microcomputer in the classroom to track student performance. The student enters his or her name, the teacher assigns a lesson to that student, and the computer keeps track of the student's record of performance. Based upon student performance, it will branch the student to a higher or lower level, and then report the progress to the student. Later, the teacher can call up the records to see how each student did. To me that is one of the most potent and sophisticated uses of the microcomputer at this time.

- The whole sequence is now a much different experience for the student. In traditional instructional material, there is a linear approach. With a microcomputer, or with computer-based materials, the approach is non-linear. That's another important thing to look at when reviewing computer-based materials: how is the student sequenced through the content? Is it a linear or non-linear approach?

- How is the text formatted on the screen? Is the text easy to read? Are there long sentences? When you are dealing with a screen, short sentences are easier to read.
- How are the graphics used? Are they used appropriately? Are they actually embedded in the content?
- Is the screen moving? Is there a lot of action? Is there too much action?
- Is feedback being used appropriately?
- Can the records be stored so that a teacher can pull them up later?
- How is it packaged? When you shake it, do the discs fall out? This is an important criterion when we're looking at software because often it will be used in a library. If the discs fall out, it basically means that many of them are going to be lost. When you're spending lots of money on software, that's something you have to consider.
- What is the teacher's manual like? Does it include suggestions for integrating the program into the curriculum?
- Also the technical design, the quick response. If you have to wait a long time for a program to be loaded in the discs, the student would probably have the whole disc apart by the time the program is loaded.

It's important to include practicing teachers on the evaluation team, and then to validate the evaluation with learners.

It's important when we're evaluating software to consider some of these criteria. But is this enough? Does this really determine what is instructionally effective software? When you're evaluating instructional materials, it's not enough to deal with just these theoretical attributes. It's very important to go beyond that and to deal with your intuitive feelings. It's important to include practicing teachers on the evaluation team, and then to validate the evaluation with learners. Including the teachers on the evaluation team gives them a sense of leadership and participation; it also provides training in the evaluation of software.

I have found that a majority of the programs available on the market are arithmetic programs. This has some implications because microcomputers are often stereotyped as a male-dominated field. Frequently the push to buy microcomputers comes from the math or science department, so the microcomputer gets placed in that section of the school. This is not a fair application. It needs to be put into a central location in the school so that it has a wide use. It can be a wonderful tool for English or for business. Word processing is another application. My recommendation is to be careful not to perpetuate this stereotyped use of the microcomputer.

We have to become good consumers.... And we need to demand and to direct the market in a positive direction.

We have to become good consumers. As educators, we've never really perceived ourselves as needing to develop strict criteria and an effective way to approach business. We need to do that. And we need to demand and to direct the market in a positive direction. This whole area is tricky. If we are too stringent in our evaluations, we will hurt the industry and turn them off to the education market. In addition, we inadvertently support those who are against using technology in education. We need to, perhaps, be a little less critical and look at the field from a broader perspective: where would we like to see it go? We want to try to direct the publishing companies and the developers in a more positive direction. We don't want to be too critical; however, we need to be good consumers and establish strict standards. We're in an interesting time right now. There is a lot of software being published and we need to sift through it. But we can't be so critical that we exclude ourselves from a market that is just starting to develop.

The developers are not taking advantage of the capabilities that are inherent in educational application. In the first place, very little true branching is taking place. Also, very little remediation is taking place. As educators, we know that remediation is an alternate way of presenting material; it is not going back and presenting the same material in the same way. Third, out of all of the programs I've looked at, only seven used a management program. Of that seven, only two were of value. I find management to be one of the most potentially valuable applications of the microcomputer, and very few take advantage of that aspect. Additionally, very few programs take advantage of placement. Placement is imperative. When a teacher gets a curriculum package that spans K through 8, where should students be placed? Again, the microcomputer is perfectly adapted for placement provisions. Very vew have pretests; very few have

This is a software-driven field; it is not hardware-driven. The hardware means nothing until you have software that you can apply.

any way of placing students; and very few have mastery or criterion levels established.

I would like to review very quickly some issues which I think are very important. First, which software do you need? What are the needs of your school district? Are commerically available evaluations satisfactory? This is a software-driven field; it is not hardware-driven. The hardware means nothing until you have software that you can apply. The only way that hardware alone is sufficient is for teaching programming. But this technology is more than just programming. It is impacting every aspect of our lives in many different professions, from lawyers to pilots and doctors. Another issue is how can we direct the market in a positive direction? Third, how do we train teachers for this technology? That's a big issue which state departments need to think about. How do we get teachers and administrators trained in order to be able to use this technology? Finally, remember that it's an overwhelming field right now. Everywhere you turn, there is more software being developed, there are new applications, and there are new hardware systems coming out. How do you keep on top of it? I don't have any answers for that. Right now there are many different applications. There is software for librarians; there are authoring systems for teachers who develop their own courses; there are management systems to track students; there are word processing applications; there are spread sheets to help administrators make decisions; and there is electronic mail. All of these types of application need to be sorted through and evaluated.

I think that technology will give the schools a chance to become more accountable, and more effective. We should not be afraid of technology, but we need to look at it as another instructional tool to make schools more effective.

As this field is a software-driven field, the role of the evaluator will become extremely important; the evaluators will become the leaders. Software concerns need to guide decisions that we make concerning hardware. We need state leadership in this field, and we need models for how to deal with this. The Southwest Educational Development Laboratory has just produced a book called Evaluation of Educational Software: A Guide to Guides. It presents all of the different forms and models for evaluation at this time. I also have handed out a form for collecting student information about courseware which we found useful for validating our evaluations of software. (See Appendix G.)

Another important issue to think about is the equity issue. Often times the rural areas are not getting microcomputers; only the more affluent areas have them. Are we tying literacy to affluence again? Are we going to be denying certain sections of the population important skills that are needed to survive in our society? Once again, I think State Departments need to get in on this and determine models.

I would like to sum up by saying that technology is here to stay. As educators, we have a responsibility to be leaders in this field, especially if we want to provide our children with the opportunity to become literate, and give them the chance to be able to deal with this new society and be employable citizens. I think that technology will give the schools a chance to become more accountable, and more effective. We should not be afraid of technology, but we need to look at it as another instructional tool to make schools more effective.

Computers in the Schools

Presenters included:

- Dr. Nelson Towle, Coordinator of Media/Instructional Materials Services, Sarasota County Public Schools, Sarasota, Florida
- Dr. Ronald Townsend, Director of Curriculum, Sarasota County Public Schools, Sarasota, Florida
- Dr. Ralph G. Vedros, Director, Florida Public Schools Resource Center, Department of Education, Tallahassee, FL

Instructional Computing

There are three types of instructional computing:

1. Computer assisted instruction, or CAI, is a mode where students interact directly with the computer to receive instruction. CAI is helpful if the instructional system requires motivation, branching, and immediate and tailored feedback. There are five types of CAI: tutorial, drill and practice, simulation, games, and modeling.
2. Computer managed instruction is the collection and organization of student data. It includes administering and scoring student tests, and collecting data.
3. Computer supported learning aids include information retrieval, calculation, programming, and other things that help the student learn but are not direct instruction or management of data. This area will become the most important use of the computer in the classroom.

Software

CAI software should be evaluated carefully to make sure it meets your needs. The following aspects should be included in effective lessons:

- Student help. Students know when they need help, and help should be given when needed.
- Student-initiated abort. Students should be able to stop the lesson that they're working on and resume when they're ready at the same place. Often, if you stop in the middle of a CAI

lesson, the program takes you back to the beginning when you start up again.

- Student prompts. Don't allow the student to guess and guess and guess. If they don't get it the first time, give a prompt; if they don't get it the second time, give a stronger prompt.

- Feedback. Everybody likes to know how they're doing. It's important that feedback for getting the wrong answer not be more fun than getting the right answer.

- Data for the teacher.

- Modular. A teacher can assign lessons 1, 3, 5, and 13 without having to progress through lessons 2, 4, and 6 through 12.

- Transparent computer.

- Straightforward directions.

Many people ask about where they can get software and what software they should use. We have identified four sources of software.

1. Locally developed. Because instructional computing software is difficult to develop, most districts will not find it feasible. It requires a team of three people: a subject matter expert, a programmer, and an instructional designer. (See model, Appendix H.) We estimate that it takes 500 man-hours to develop one hour of good lessons.

2. Public domain (those that have been funded by federal projects.) Our experience shows that these are not very good. Some of them are idiosyncratic to the teacher-developer; others contain frequent errors. In reviewing 256 lessons of public domain software, I found only two that I would be willing to use in the classroom.

3. Contracting with a programmer. The problem here is that you also need the subject matter expert and an instructional design consultant, and the cost becomes prohibitive for most districts.

4. Ready-made, commercially available software. You still have to be careful in evaluating it to make sure it fits the objectives in your curriculum and that it is instructionally effective, but this is the best source now, and probably in the future.

Hardware

The selection of hardware must be software-driven. You must ask first, what is the problem that I'm trying to solve? Once that is well-defined, you ask what software is available to help solve that problem. Once you have determined that, you find out which machines accommodate that software. And then you know which machine you should buy. Don't buy the machine first and then figure out what to do with it.

Sarasota County

We started out in 1976 with a large mainframe, an NCR 8450. All 35 schools have at least one terminal which is connected by phoneline to the mainframe. In 1978 we bought our first microcomputer. There are now about 130 microcomputers in the Sarasota County schools. Few of these have been purchased with local tax dollars; most have been purchased by Boosters, PTAs and other groups through various fund-raising activities. The county was unwilling to purchase until they had a plan for the use of the microcmputer. They intend to purchase an additional 200-300 micros for the schools this year.

The main purpose of microcomputers in our schools is computer literacy. We believe that students need to know about computers and how to use them. We are not ready to say that the computer is a good instructional delivery tool until we have a lot of good software.

One of the most important projects we have is called RECIPE. It is a program that uses a microcomputer as a communication device for severely physically handicapped kids. For some of our kids it is the first time that they have been able to communicate with the outside world. We use tongue switches, knee switches or whatever kind of device will enable them to communicate. This has allowed us to determine that some of our severely handicapped kids are very bright. One 18-year-old, who was essentially a vegetable two years ago, soon will be self-sufficient working as a computer programmer.

The Sarasota County Board of Education has passed a new requirement for high school graduation. By 1987, students will have to demonstrate computer literacy in order to graduate. Definitions of "computer literacy" should be considered temporary because technology is changing so fast. Our definition right now, which will be obsolete soon, identifies computer literacies for different populations in our schools: elementary students, middle school students, high school students, administrators, clerical staff, teachers, aides, computer resource teachers, guidance counselors, and media people. (See Appendix H.)

Staff Development. Teachers worry a lot because they think they must be experts in order to help kids learn. You don't need to be an expert to help kids use computers; however if you're going to get into instructional computing, it is important to provide in-service. We have made a commitment that our teachers and administrators will be computer literate within two years. Our staff development program is described in Appendix H.

Florida

Sarasota County is not standard. It is a leader in the state in terms of the application of computer technology in education. There are several things that Florida is doing statewide that are of interest in the educational applications of computers.

1. The Florida legislature supports the use of computers in all phases of education; not only in CAI, but also in terms of data management. There is a large monetary commitment and a legislative committee has been established to oversee the use of computers in the school.

2. The Florida Information Resource Network (FIRN) is a five-phase project. Currently we are finishing phase two. The state has been divided into five regions, which we call nodes. Each node is located at a data processing center, typically at a university. The FIRN is a network of communication which will link every school in the state; schools will feed into the district, districts will feed into the nodes, and the nodes will feed into Tallahassee. For example, all school districts get their funding based on full-time teacher equivalents (FTE).

   This information will come from the schools to the districts to the nodes directly into the state department. Next month, a rural county in the panhandle will tie in and use a program developed in Dade County. Eventually any school in the state will be able to tap into Sarasota County, for example, to use their software. By 1990, FIRN will be fully operational and will be able to do electronic mailings, bulletin boards, evaluation of software, etc.

3. At the state department we have a computer laboratory to assist in developing computer literacy. Hardware and software has been donated from several manufacturers. School districts send representatives to be trained. There is a basic course and an advanced course. These representatives return to their local districts able to assist in instructional computing.

4. The State compensatory program is funded at $33 million. We use a state assessment at the third, fifth, eighth, and eleventh grade levels. In tenth grade, students must take a functional literacy test. If they fail it, they can take it again--twice in eleventh grade and twice in the twelfth grade. They have five opportunities to pass the test. The courts have just ruled that diplomas may be withheld if students have not passed the eighth grade assessment and the functional literacy test. The state provided $30 million for remediation. A lot of this money is spent for computers. I must admit, it has not always been spent wisely, but we have come a long way. I remember hearing of one district that bought thirty microcomputers and then called the university to ask for technical assistance to tell them what to do with the hardware. It has not always been the case that schools have identified their needs, and looked for software to solve the problem before buying the micros. I still see some compensatory dollars buying the hardware because the money is available but the software is lagging behind. The state is trying to do something about it. One school district has been funded at $75,000 a year for three years, to evaluate software for exceptional students. They're going to use some satellite districts, who've been funded at $50,000 a year, to assist them in having teachers and students try out the software. Then this coordinating unit will disseminate the evaluation results.

The state is toying with the idea of doing something similar for regular education. Thus far they have funded a project, $75,000 to the University of South Florida, to evaluate microcomputer software. We may look at some other methods, but this is an attempt to establish a state-wide mechanism for coordinating the evaluation of software for dissemination throughout the district.

5. In the area of staff development, the legislature will probably mandate this year that no state teacher can be certified without having at least one course in computer literacy. This will make universities or colleges of education sit up and take notice and do some of the things that we have been talking about.

6. They are going to mandate, quite likely, a minimum requirement for computer literacy. Florida, being a home-rule state, will allow the individual district to determine what computer literacy is. But the students who graduate will have to have at least one semester of computer literacy.

The Impact of the Computerized Instructional Management Systems in Lynchburg, Virginia

Presenters:

- Dr. Mary Lovern, Associate Director, Innovative Programs, Virginia Department of Education.
- Mr. Ronald H. LaReau, Director of Data Processing and Research, Lynchburg Public Schools
- Mr. Herbert A. Vitale, Supervisor of Secondary Education, Lynchburg Public Schools

Introduction

Lynchburg is one of six school divisions that have participated in a Consortium funded through the Pilot Studies Program. Since 1975, we have been working on the management of information for decision-making. The Consortium's work has focused on using a knowledge base for making meaningful and productive decisions that will improve educational programs and administrative procedures.

Background

Lynchburg is a small city located in central Virginia. We have about 10,000 students in two high schools, three middle schools, and 12 elementary schools. The city's economy is diversified. There are a lot of technical workers and a large number of highly educated people. We receive a lot of community support for education. We also have a large percentage of Title I students. Forty percent of our population are minority students.

We started a data-based management system in 1975, following a model developed by Mary Lovern. We have implemented several components of the model, and the computer services offered by the Lynchburg Schools include the following:

1. Personnel

   o We keep records of attendance of all teachers, principals, custodians, and bus drivers--everyone who works for the schools. We send a monthly report to every school which lists number of vacation days, sick leave days, and annual leave.

- We also generate contracts just one day following the approval of the budget.
- We keep statistical information, e.g., how many teachers need to have their certificates renewed.

2. Special Education Management System

   - We found that with special education, in trying to meet state requirements and federal reporting requirements, we were losing kids, so we have computerized the record keeping.

3. Media Center

   - All of our films are listed on a computer. The media center calls the schools daily and films are booked by using the computer.

4. Students

   - We keep attendance records.
   - Grade reporting is done by computer.
   - Our academic record is something new we have developed. Every semester students get a print-out of all the courses they have had in high school, the grade, the credits, their rank in the class, how many were in the class, when they're going to graduate, etc.
   - Impact Aid. We had problems because we had to send a form home and get parents to sign them and send them back. I found out the federal government would accept a print-out signed by the local H.U.D. office verifying that we had "x" number of students living on federal property. Now we generate a list of all students who live in federal housing and send it over to HUD. After they sign it, we send it in. That has saved us a lot of time and aggravation.
   - Scheduling
   - Statistical Information

- Test Scoring. We have data-based criterion-referenced tests in language arts, reading, and mathematics. We also score the SRA in grades 2, 3, 5, 6, and 7.

5. Instructional management system. This will be the emphasis of our presentation today.

First, I'd like to tell you about the equipment we have. We have a Digital 1134 computer system and an NCS 7001 scanner. We bought it on a lease-purchase arrangement over a five year period at a cost of $27,000 per year. We now own it. If I were doing it today, I could probably set up the same system for about $40,000. I know now that you can buy used equipment, which is a lot cheaper than buying it new. Essentially we have gotten everything we have needed to implement our program from the school administration and the school board.

Second, I'd like to give you some background. As Director of Research and Planning, I have the responsibility to present our SRA test scores to the Lynchburg City Public School Board every year. These scores always appear in the local newspaper. In 1973, before we started on our management system, our sixth grade math computation scores were at the 30th percentile. Our STEA (ability predicator) was at the 39th percentile. I went to the board with this information and rationalized, as we often do, that we wern't that far off. Forty percent of our students are minority students, we have a large percentage of Title I population, our ability scores are limited and so forth. Our new superintendent was not impressed.

In 1979-80, which was the last year we used that same test, our sixth grade math computation scores were at the 65th percentile. That's a gain of 35 percentile points per student. Our sixth grade composite scores moved from the 43rd percentile to the 61st; at the fifth grade, we went from the 49th to the 64th; in fourth grade, from the 39th to the 64th; in third grade, from the 44th to the 63th; and in second grade, from the 46th to the 68th. Those are average gains for 800 to 900 students per grade. (See Appendix I for comparison of math computational skills.)

Implementation: Instructional Management System

We feel that our management monitoring system of basic skills has made the difference. Back in 1973, our superintendent sent us out in administrative teams to observe what was happening in the classrooms. We found out that we had a system of schools--not a school system. Everybody was doing their own thing, using different materials, a different sequence, and spending different amounts of time on different instruction. There was no relationship between one school and another.

We set up a criterion-based monitoring system to implement our instructional program. We have six levels in each of three areas: language arts, reading, and math. In level 3 of math, for example, there are 24 skills which students are required to know. We test for mastery. Each skill has four items and we assume mastery when a student gets three of the four items correct. Teachers can test students at any time. There is a one-day turn-around time in getting test results back because we have daily mail service to all the schools. The results show exactly which skills the students know and which ones they have to work on. Each teacher gets a print-out that shows which children in the class have mastered each objective. This allows them to group students for working on a particular skill area; consequently, we are not spending time teaching students things they already know. We give the results to the student as well as to the teacher.

We also generate a status report of all the students by grade level for each school. This allows the principal, as well as the classroom teacher, to determine which skills need to be emphasized. (See sample in Appendix I.) We have the same kind of reporting for the entire school division, reporting by grade the number and percent of kids who have mastered each objective. Additionally, every 9 weeks, each school gets a print out by class of the number of objectives a student has achieved in each level.

Once a student has completed our basic skills program, then he or she moves into the accelerated program. Every student in the Lynchburg Public Schools must spend 3 1/2 hours a day in language arts, reading, and mathematics. If they are below grade level, they must spend an additional 30 minutes a day in whatever area they are below grade level. We have made a decision that this is the most important thing we do in the elementary schools. A student may never get art or physical education. But they will all receive basic skills instruction.

These results are maintained on file throughout the course of students' elementary programs, regardless of their grade level or school. This is automatically and electronically transferred from one grade to the next and from one school to another. Every year we send each middle school a print out, for each of the three basic skills areas, of all the students that will be attending that school.

We have tried to eliminate paperwork for teachers. All of the tests and answer sheets are preprinted with the student's name and I.D. number. All the teacher has to do is go to the file, pull out the answer sheet, and give it to the student. The system has worked extremely well and it is comforting to know that for every student in the Lynchburg elementary schools, we can tell you exactly where he or she is in the three areas of language arts, reading, and math.

Parents also know exactly how students are doing, and they know in which area students need help. They get this report every nine weeks. When they come in nine weeks later, they'll want to know what the teacher has been doing. They are able to see the amount of progress made in a detailed report.

As you can see, basic skills is our major priority in the elementary schools. That's not to say there isn't a lot else going on. That's where we put our emphasis. We're not monitoring science instruction, or our health and physical education program. That doesn't mean we don't have it in our program; it doesn't mean children aren't participating; but we don't have the same degree of accountability in those areas. In the middle schools, we add essential skills, which is the same as our state minimum competencies program. In the high schools, we offer essential or minimum compentencies, basic skills, and specialized skills. By the way, the first year for minimum competency testing in Virginia, Lynchburg had 87 percent of the students pass on their first time.

We had 89 percent of our black students pass math the first time around; 92 percent passed reading. So we have a very high rate of success for our minority students as well.

The process is not new to anyone. We're using a diagnostic test; we're finding out where kids are on a continuous process; and we're prescribing instruction directed right at those specific skills and objectives. It obviously narrows the scope of the curriculum, but only from the standpoint of what we're holding teachers, principals, students, parents and supervisors accountable for. We're teaching things other than what we're monitoring. For example, we teach computer literacy to every student in the Lynchburg public schools.

After students have mastered the basic skills, the only thing they have to pick up are the applied areas on the minimum competencies. For example, students have learned to add whole numbers, but they have to be able to do that in the context of handling money to pass the minimum competencies. They may be able to handle fractions, but they have to be able to handle measurements of a cup, for instance, in applying the use of fractions on the minimum competency measures.

I'd like to tell you something about how we went about this process. We not only developed tests, but we also developed or identified instructional materials to support the teaching of the specific skills. We have a very significant program of staff development. There are a lot of teaching chores involved, so we've produced teacher information packages for each of these skill areas. These were developed by teachers for teachers. They include information on where to get support materials, who to ask for them, how often they need to keep data, who's going to use it, how to report to parents, what the reporting form will look like, and so on. In fact, very often you'll find an additional monitoring process that was developed by the staff--a paper and pencil process to keep track of what the computer keeps track of. It's amazing. No one requires that. Three years ago we had another priority in the English/Language Arts area. We had a heavy emphasis in writing, and we knew that teachers were overburdened. We abandoned the monitoring of Essential English to ease up on the teachers' loads, and asked them to concentrate on writing skills. Last year, we found out that every school had continued Essential English despite the lack of requirements. There was not a single "drop out" of the process.

We conducted staff development for administrators, teachers, aides, and parents. It's an on-going process. Modifications of the program take place based on staff recommendations, often at the school building level. When teachers tell us that this is not going to work, we change it, and it usually works better.

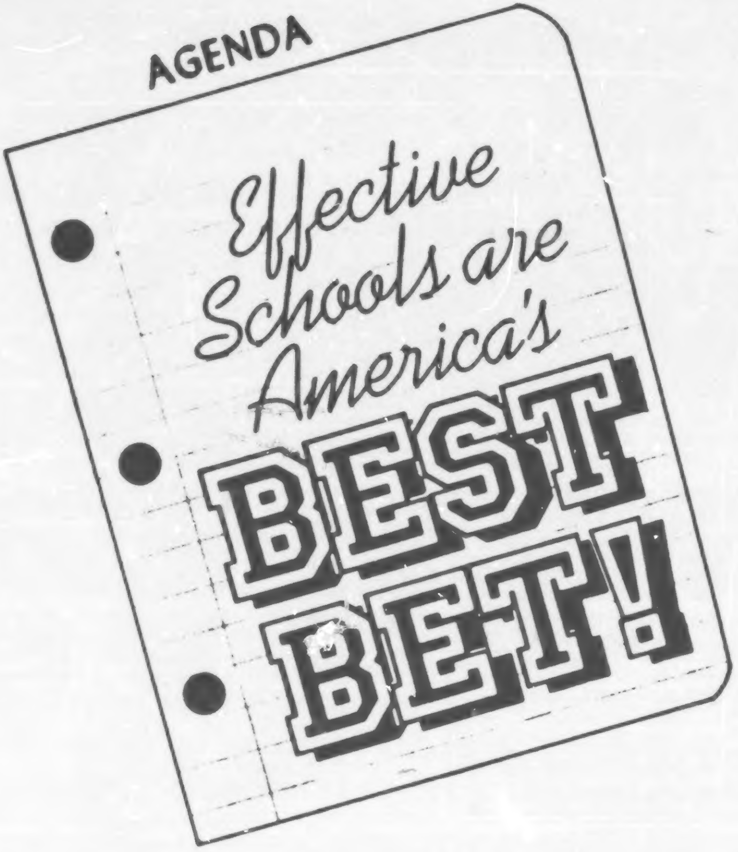
We are able to evaluate our program based on this data as well as other things. There's formative as well as informal evaluation going on. We can evaluate teacher performance. I can say to a teacher, "It appears that a large number of children in your classroom have not mastered these objectives. What's being done to help these children?" If the teacher has been working really hard on it, I might be able to suggest another method, or obtain an aide to help in that area. The principal has an opportunity to work with the staff and to say, "We'll group them and we'll put our resources here to help those children." It works out well. Administrators are held accountable, and at the district level we're all held accountable. The only people who are paid based on the achievement of objectives are administrators. There are many administrators who got no raises while others got as much as five or ten percent. Each nine weeks, the principal gets a print-out and at the bottom is the average number of objectives accomplished in each grade level. Each princpal starts out with a target, and evaluation revolves around the accomplishment of that target number of objectives (as an average per child.) Test data are just part of an administrator's evaluation. There is a team approach to evaluation.

We use the computer for instruction; reporting progress; and placement for specific instructional areas, special education, gifted and tracking. The information is extremely useful. Overriding are the two processes of monitoring and evaluation. It's really competency-based instruction. It's nothing new. It gives you a vehicle to hone in on a certain set of objectives. It's hard work, but teachers generally are very positive and feel that in Lynchburg we do it better than others around the state.

Appendices

Appendix A

Forum Agenda and Participant List


AGENDA
Effective Schools are America's
BEST BET!

Promoting School Excellence through the Application of Effective Schools Research

Sponsored by the

Regional Exchange
Appalachia Educational Laboratory

Cohosted by the

West Virginia Department of Education

May 16-18, 1983 • Marriott Hotel • Charleston, West Virginia

ACKNOWLEDGEMENTS

This Forum has resulted from the efforts of many dedicated persons. Sincere thanks are extended especially to the cohost, the West Virginia Department of Education and particularly to Dr. Joseph C. Basile II, AEL's state contact person in West Virginia.

The ESO staff has been tremendous in working as a team. Special thanks are due:

- Carolyn Luzader, Research Assistant
- Marilyn Slack, Research Assistant
- Kim Cowley, Secretary
- Shirley Keene, Secretary
- Sinette Newkirk, Secretary.
- Lori Roberts, Secretary
- Sevilla Finley, Information Specialist

The AEL eleven-state Region has been well represented at the Forum. Thanks to our state contact persons and state consultants at AEL.

To all of you, presenters and participants, we're glad that you came to our 1983 Forum.

Sincerely,

Mabel

Dr. Mabel C. Lee
Educational R & D Specialist/
Forum Coordinator

Effective Schools Are America's Best Bet: Promoting School Excellence through the Application of Effective Schools Research

Objectives

1. To provide workshop attendees state-of-the-art information on applications of effective schools research.
2. To provide workshop attendees state-of-the-art information on effective applications of technology in schools.
3. To provide workshop attendees opportunities to interact with presenters concerning applications of workshop content.

Monday, May 16, 1983

7:00 p.m.-9:00 p.m.	Hospitality *(cash bar)* and Registration *(Blue Ridge Room)*

Tuesday, May 17, 1983

7:30 a.m.	Registration *(Continental Breakfast) (Salon D)*
8:00 a.m.	Greetings *(Salon D)*

Ms. Sandra Orletsky, Director, Regional Exchange, Appalachia Educational Laboratory

Dr. W. Tom McNeel, Deputy State Superintendent, Department of Education, Charleston

Dr. Terry L. Eidell, Director, Appalachia Educational Laboratory

Effective Schools Are America's Best Bet

Mr. E. Joseph Schneider, Executive Director, Council for Educational Development and Research (CEDaR), Washington, D. C.

Dr. Jack Sanders, Director, Educational Services Office, Appalachia Educational Laboratory

The *Best Bet* program is designed to help school districts use the results of educational research and development in two areas: effective school practices and educational technology. In recent years, a body of research has emerged showing that practices in schools can have a considerable impact; specific practices have been identified that make schools better places for students to learn. The *Best Bet* program is designed to show local school leaders how to incorporate the results of this research into school district operations.

9:30 a.m. First General Session *(Salon D)*

Megatrends:* *A Forecast for America in the 80's

Dr. Shirley McCune, Director, Technical Assistance and Leadership Development, Education Commission of the States, and Consultant to the Naisbitt Group

Dr. McCune is a consultant for the Naisbitt Group. John Naisbitt, chairman of the Group, is author of the best-selling book, ***Megatrends***. Both ***Megatrends*** and the Group's periodical, the ***Trend Report***, interpret the social, economic, and political changes which impact our lives. The Naisbitt Group utilizes content analysis of 2,500 newspapers as the basis of its interpretations. Dr. McCune's general presentation will highlight the book. Her concurrent session will focus on ***Megatrends'*** significance for public education.

10:30 a.m. Forum Overview *(Salon D)*

Dr. Mabel C. Lee, Educational R & D Specialist/ Forum Coordinator, Appalachia Educational Laboratory

10:40 a.m. Break

10:45 a.m. Concurrent Sessions

West Virginia *(Salon D)*

Implementation and Evaluation of Teacher Expectations and Student Achievement Project in Ohio County Schools. This presentation will describe the Ohio County Project which was a result of long-term systematic planning and goal-directed program development by personnel representing Ohio County Schools, AEL, and the West Virginia Department of Education. This project exhibits the productivity and quality that are possible when various agencies work together in a collaborative and cooperative venture. Each agency brings to the project its special expertise in terms of resources: human, fiscal, and physical. The project provides data-based insights into instruction and learning in general, and exemplifies a systematic educational staff development model which includes the following phases: design, development, implementation, evaluation, and reconceptualization.

Dr. Joseph C. Basile II, Director, Office of Educational Program Development, Department of Education, Charleston

Dr. Henry Marockie, Superintendent, Ohio County Schools, Wheeling

Dr. Merrill L. Meehan, Educational R & D Specialist, Appalachia Educational Laboratory

Tuesday, May 17, 1983–10:45 a.m. Concurrent Sessions (cont'd.)

West Virginia *(Salon E)*

The West Virginia Department of Education Effective Schools Program. This presentation will describe the process being used to develop definitions, alterable elements, indicators, and measures of effective schools in West Virginia within the context of early childhood, middle childhood, and adolescent education.

Dr. Charles D. Duffy, Director, Office of School Effectiveness, Department of Education, Charleston (presiding)

Dr. Al Canonico, Coordinator, Early Childhood Education, Department of Education, Charleston

Ms. Lydia L. McCue, Coordinator, Middle Childhood Education, Department of Education, Charleston

Ms. Helen V. Saunders, Coordinator, Adolescent Education, Department of Education, Charleston

Florida *(Salon F)*

Computers in the Schools. This session will address three major areas: computers in the classroom, computers in the curriculum, and computers in teacher inservice.

Dr. Nelson Towle, Coordinator of Media/Instructional Materials Services, Sarasota County Public Schools, Sarasota

Dr. Ronald Townsend, Director of Curriculum, Sarasota County Public Schools, Sarasota

Dr. Ralph G. Vedros, Director, Florida Public Schools Resource Center, Department of Education, Tallahassee

12:15 p.m.	Lunch *(on your own)*
1:30 p.m.	Second General Session *(Salon D)*

The New Jersey School Effectiveness Training Program

Mr. Donald R. McNeely, Associate Director of Instruction, New Jersey Education Association, Trenton, New Jersey

The New Jersey Education Association has designed and piloted a unique approach to school improvement called the ***School Effectiveness Training (SET) Program.*** *SET*–a combination of school effectiveness research, team-building, and priority-setting techniques–mobilizes total school communities to work collectively toward making educational improvements.

Tuesday, May 17, 1983 (cont'd.)

2:30 p.m. Concurrent Sessions

Megatrends–Dr. Shirley McCune (Salon D)

(See previous description)

West Virginia–*The West Virginia Department of Education Effective Schools Program (Salon E)*

(See previous description)

Florida–*Computers in the Schools (Salon F)*

(See previous description)

Break

4:00 p.m. Concurrent Sessions

Virginia *(Salon D)*

The Impact of the Computerized Instructional Management Systems in Lynchburg, Virginia. This session will focus on the impact of the computerized management system on the instructional program with respect to reading, language arts, and mathematics. The presenters will share their work and experiences with 15 elementary schools in Lynchburg.

Mr. Ronald H. LaReau, Director of Data Processing/Research, Lynchburg City Public Schools, Lynchburg

Mr. Herbert A. Vitale, Supervisor of Secondary Education, Lynchburg City Public Schools, Lynchburg

North Carolina *(Salon E)*

Performance Appraisal Program. Personnel from local projects and the state level will give an overview of the *Performance Appraisal Program*, a major project undertaken by North Carolina in its effort to implement the legislative mandate relative to performance appraisal. Much work has been done in the development of instruments and procedures for appraisal of professional personnel. The training program implemented thus far has provided an orientation to appraisal instruments, suggested appraisal procedures, data collection skills, and conferencing skills.

Mr. J. R. Brendell, Consultant, Northwest Regional Center, North Wilkesboro

Ms. Juanita Floyd, Director of Personnel Relations, Northwest Regional Center, North Wilkesboro

Ms. Faye Burton, Principal, Jefferson Elementary School, Shelby

Ms. Helen LeGette, Director, Federal Projects, Burlington City Schools, Burlington

Ms. Mary Nantz, Director of Staff Development, Iredell County Schools, Statesville

Tuesday, May 17, 1983–4:00 p.m. Concurrent Sessions (cont'd.)

Alabama *(Salon F)*

The Alabama Urban Connection. This session will focus on a two-year project that exemplifies collaboration among two urban areas, the State Education Agency, and AEL. The presenters will discuss the impetus for establishing the collaborative project and explain how local school improvement programs have impacted school-community relations.

Dr. Frank Schneider, Director of Research and Evaluation, Mobile County Schools, Mobile

Ms. Marie Scott, Resource Teacher, Arlington Staff Development Center, Mobile

Ms. Dawn Smith, Resource Teacher, Mobile County Schools, Mobile

5:30 p.m. Hospitality Hour *(cash bar) (Salon C–tentative)*

6:30 p.m. Dinner *(on your own)*

Wednesday, May 18, 1983

7:30 a.m. *(Continental Breakfast) (Salon D)*

8:00 a.m. Concurrent Sessions

The New Jersey School Effectiveness Training Program–*Mr. Donald R. McNeely (Salon D)*

(See previous description)

Ms. Cathy Spence, Graduate Student, Special Education Administration, Gallaudet College, Washington, D. C. (reactor)

North Carolina–***Performance Appraisal Program*** *(Salon E)*

(See previous desciption)

Tennessee *(Salon F)*

Tennessee's Better Schools Program. An overview of the program's ten major areas will be presented, as well as indepth reviews on three of the areas: Computer Skills Next, Master Teacher Program, and Master Principal Program.

Ms. Catherine Prentis, Educational Specialist, Division of Research and Planning, Department of Education, Nashville

Mr. Jim Oakes, Coordinator, Mathematics, Computer Skills Next Program, Department of Education, Nashville

Wednesday, May 18, 1983 (cont'd.)

9:30 a.m. Third General Session *(Salon D)*

Evaluation of Educational Software and the Use of Videodiscs in Education

Dr. Vicki B. Cohen, Director of Instructional Design, Interactive Software Organization (ISO) Communications, Inc., New York, New York

Dr. Cohen's presentation on technology will describe criteria decision-makers can use to select among alternative software packages. Procedures for applying the criteria will be discussed also. The second part of the presentation will describe educational applications of the videodisc.

10:30 a.m. Concurrent Sessions

* ***Evaluation of Education Software and the Use of Videodiscs in Education****—Dr. Vicki B. Cohen (Salon D)*

(See previous description)

Virginia—***The Impact of the Computerized Instructional Management Systems in Lynchburg, Virginia*** *(Salon E)*

(See previous description)

Alabama—***The Alabama Urban Connection (Salon F)***

(See previous description)

12:00 p.m. Closing Session/Evaluation/Adjournment *(Salon D)*

Ms. Sandra Orletsky

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* *Color monitors used during the presentation are compliments of The Computer Store, Charleston, West Virginia.*

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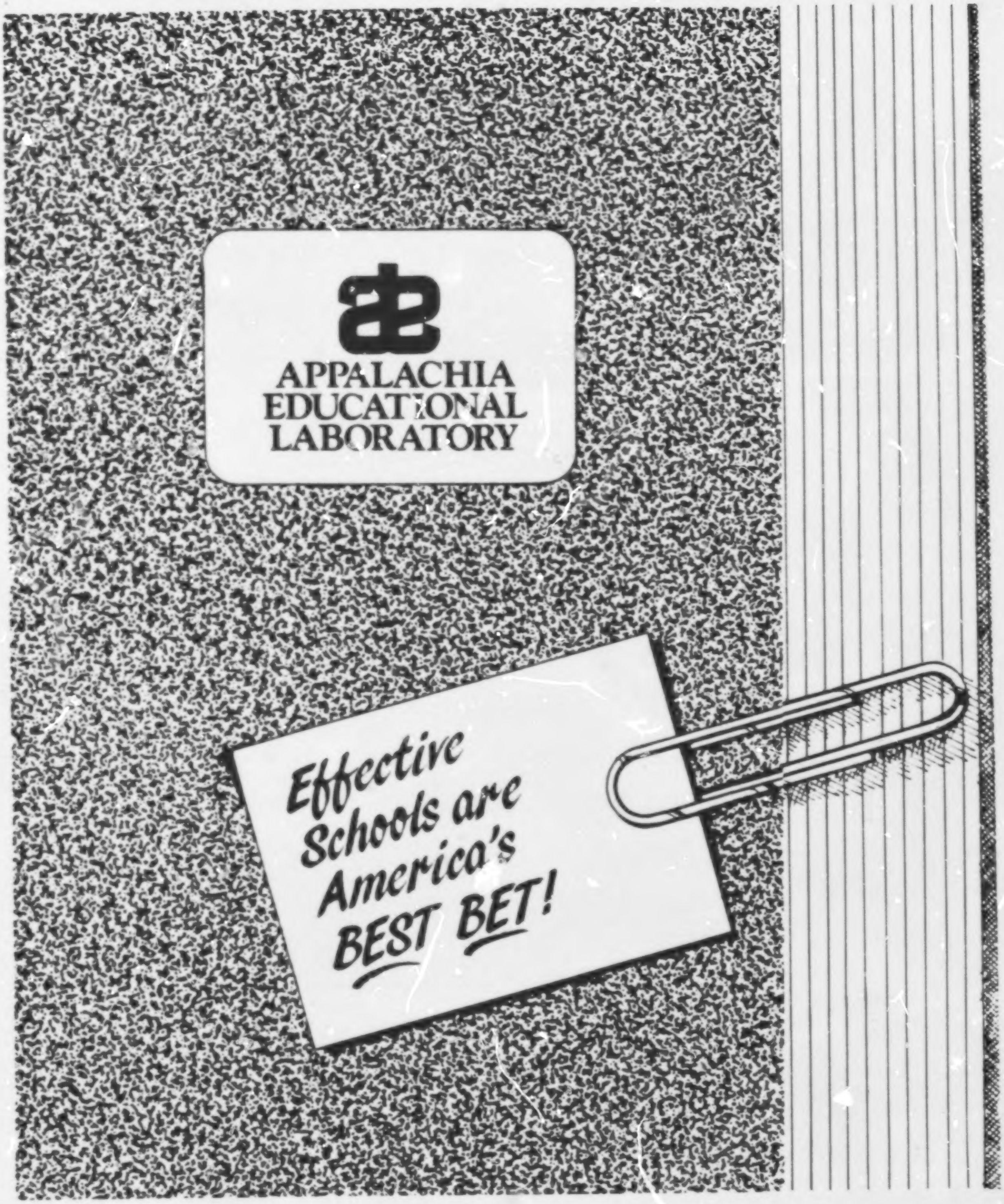
Appendix B

Effective Schools Are America's Best Bet (brochure)

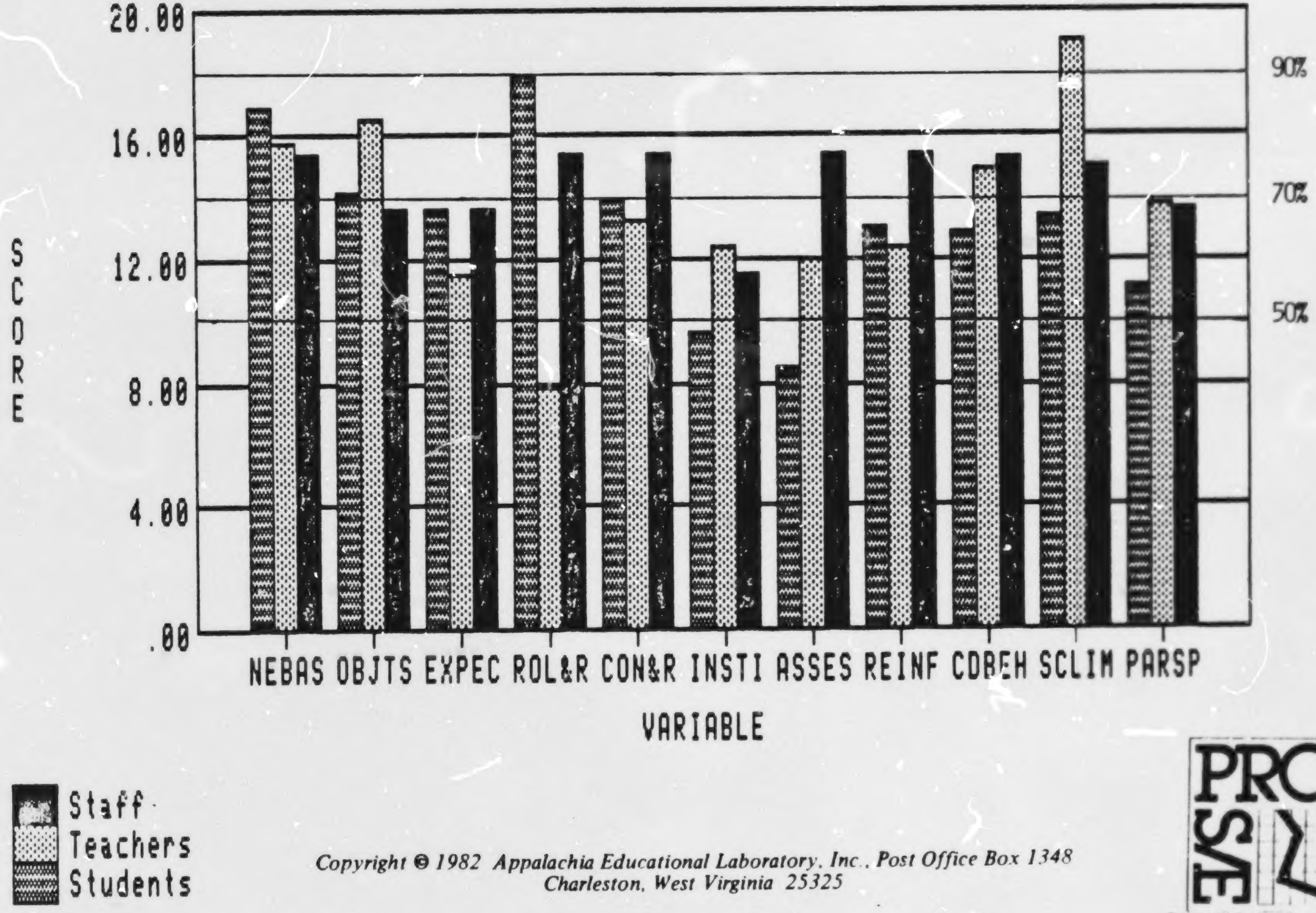

APPALACHIA
EDUCATIONAL
LABORATORY
Effective Schools are America's BEST BET!

A copy of this brochure was given to all Forum participants. If you would like a copy please write to:

Appalachia Educational Laboratory
P. O. Box 1348
Charleston, West Virginia 25325

Appendix C

Handout to AEL Presentation



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Charleston, West Virginia 25325

PROSE
Profile of School Excellence

Appendix D

Handouts to North Carolina Presentation

(c) Copyrighted 1976 by Madeline Hunter

FACTORS WITHIN THE CLASSROOM THAT AFFECT LEARNING

Madeline Hunter

1. Factors which affect motivation to learn
    - a. Concern
    - b. Feeling tone
    - c. Success - level of difficulty
    - d. Interest - self-novelty
    - e. Knowledge of results
    - f. Extrinsic - intrinsic

2. Factors which affect rate and degree of learning
    - a. Motivation
    - b. Reinforcement
        1. Positive
        2. Negative
        3. Extinction
        4. Schedule
    - c. Active Participation
        1. Overt
        2. Covert
    - d. Practice
        1. Amount of material
        2. Amount of time
        3. Schedule (massed or distributed)
        4. Over-learning
    - e. Knowledge of results
    - f. Degree of guidance
    - g. Level of aspiration
    - h. Meaning
    - i. Positive and negative transfer
    - j. Sequence, length and relationship
    - k. Vividness
    - l. Modeling
    - m. Anticipatory set
    - n. Hemisphericity
    - o. Observational learning

3. Factors which affect retention
    - a. Degree of original learning
    - b. Feeling tone
    - c. Practice schedule
    - d. Meaning
    - e. Transfer

4. Factors which affect transfer
    - a. Similarity
    - b. Association
    - c. Degree of learning
    - d. Critical attributes

Motivation Theory for Teachers. 1967. Reinforcement Theory for Teachers. 1967. Retention Theory for Teachers. 1967. Teach More -- Faster! 1969. Teach for Transfer. 1971. Madeline Hunter. TIP Publications. P. O. Box 514
El Segundo, California 90245

OBSERVATION LOG

I LESSON PLANNING
- A - Anticipatory Set
- B - Objective
- C - Input
- D - Modeling
- E - Check for Understanding
- F - Guided Practice
- G - Independent Practice

II MOTIVATION
- A - Level of Concern
- B - Feeling Tone
- C - Success
- D - Interest
- E - Knowledge of Results
- F - Intrinsic Value
- G - Extrinsic Value

III GENERAL
- A - Extended Thinking
- B - Level of Difficulty
- C - Vividness
- D - Meaning
- E - Monitoring

IV REINFORCEMENT: Positive____________ Negative____________ Extinction

ANECDOTAL RECORD

DATE____________ TIME____________ TEACHER____________ CLASS__________ (What, When, How?)

CONCLUSIONS	TIME		

Iredell County

PERFORMANCE STANDARDS

MAJOR FUNCTION B. OVERSEEING THE PROGRAM

CRITERIA	LEVELS OF PERFORMANCE				
The teacher ...	UNSATISFACTORY	NEEDS IMPROVEMENT	MEETS STANDARD	EXCEEDS STANDARD	N.A.
1. Applies curriculum scope, sequence, continuity, and balance in carrying out the annual instructional plan.	Rarely demonstrates during the instructional process a clearly structured and logical plan in order to accomplish stated objectives.	Occasionally demonstrates during the instructional process a clearly structured and logical plan in order to accomplish stated objectives.	Frequently demonstrates during the instructional process a clearly structured and logical plan in order to accomplish stated objectives.	Consistently demonstrates during the instructional process a clearly structured and logical plan in order to accomplish stated objectives.	
Comments					
2. Implements learning strategies that address the needs identified in the annual instructional plan.	Rarely utilizes varied learning strategies for matching student needs and abilities where appropriate.	Occasionally utilizes varied learning strategies for matching student needs and abilities where appropriate.	Frequently utilizes varied learning strategies for matching student needs and abilities where appropriate.	Consistently utilizes varied learning strategies for matching student needs and abilities where appropriate.	
Comments					

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PERFORMANCE STANDARDS

MAJOR FUNCTION B. OVERSEEING THE PROGRAM

CRITERIA	LEVELS OF PERFORMANCE				
The teacher ...	UNSATISFACTORY	NEEDS IMPROVEMENT	MEETS STANDARD	EXCEEDS STANDARD	N.A.
3. Uses appropriate evaluation methods to determine whether the annual instructional plan is working.	Rarely evaluates student accomplishment based on the objectives of instruction using appropriate methods and individual student ability.	Occasionally evaluates student accomplishment based on the objectives of instruction using appropriate methods and individual student ability.	Frequently evaluates student accomplishment based on the objectives of instruction using appropriate methods and individual student ability.	Consistently evaluates student accomplishment based on the objectives of instruction using appropriate methods and individual student ability.	
Comments					
4. Makes changes in the annual instructional plan when evaluation indicates a need and seeks advice and assistance if needed.	Rarely evaluates the the instructional plan or seeks assistance from appropriate personnel in making needed revisions of the original plan.	Occasionally evaluates the instructional plan or seeks assistance from appropriate personnel in making needed revisions of the original plan.	Frequently evaluates the instructional plan and seeks assistance from appropriate personnel in making needed revisions of the original plan.	Consistently evaluates the instructional plan and seeks assistance from appropriate personnel in making needed revisions of the original plan.	
Comments					

Appendix E

Handouts to Tennessee Better Schools Presentation

I want to help! Please include my name among "Tennesseans for Master Teachers."

NAME ____________________

ADDRESS ____________________

CITY/STATE ____________________

COUNTY ____________ PHONE ____________

Tear off this coupon and mail to:

Tennesseans for Master Teachers
16th Floor, James K. Polk Building
Nashville, Tennessee 37219

REWARDING TENNESSEE'S TEACHERS

A Career Ladder

The Better Schools Program will provide an opportunity for 87 percent of Tennessee's teachers to receive additional pay for excellence in performance.

The program will set up four career stages: Apprentice, Professional, Senior and Master teachers. Professional, Senior and Master teachers must all renew their licenses (or move up to a higher license) every five years. The program is optional for teachers under the present system.

Incentive Pay

PROFESSIONAL TEACHER. Teachers awarded the professional status will be paid $1,000 more than a regular teacher makes today.

SENIOR TEACHER. A teacher awarded Senior status will be paid $2,000 more by the state for a 10-month contract and $4,000 more for an 11-month contract. This means a 10-year teacher who is earning $16,869 will get a salary increase to $20,869.

The state will pay all additional costs for about 11,500 Senior Teachers. That is 25 percent of all state teachers and about 50 percent of those who have taught over eight years.

MASTER TEACHER. Teachers awarded this Master status must have 13 years of experience and will accept additional responsibilities, including the evaluation of teachers in other school districts.

Master Teachers will receive $3,000 more for working under a 10-month contract, $5,000 more for an 11-month contract, and $7,000 more for a 12-month contract.

The state will pay all of the extra costs for those teachers who qualify in the Master category—about 15 percent of all teachers.

A similar incentive pay system will be established in the corresponding MASTER PRINCIPAL PROGRAM for school administrators.

How The Plan Will Be Funded

Governor Alexander has asked for his first general tax increase in five years to fund the program. It will be implemented over four years in order to make the transition as effective and smooth as possible.

The Governor has asked the legislature to increase the sales tax by one-half cent effective January 1, 1984, and another half cent effective January 1, 1985.

This additional revenue will supply the $210 million necessary to fully implement the program.

"This public document was promulgated at a cost of $0.01 per copy, to provide an explanation of the Better Schools Program." Printing Authorization Number 2039, 50,000 copies printed

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The Better Schools Program

"No teacher in Tennessee's public school system is paid a penny more for excellence in performance."
Lamar Alexander

Prepared by the Better Schools Task Force

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Newspapers Endorse Program

"We support Gov. Lamar Alexander's Master Teacher Program. . . The governor's program is the major plank in his broad program to raise the educational level of the state by a substantial increment within just the next few years—the remainder of his term. What irony if the major opposition to that so admirable broad goal came from within the educational system itself."

The Oak Ridger

"The governor's innovative leadership in helping Tennessee improve its education system ought to be viewed for what it is—of utmost importance in the well-being of the people and the economy of the state."

Nashville Banner

"Given the problem and the solution, there should be no doubt that the governor's proposals point in the right direction. Details will be debated. Some priorities will be challenged. But the concept is unassailable. . . This is Tennessee's greatest challenge. This is the time to meet it."

Memphis Commercial-Appeal

"When Alexander talks better schools, he's not talking about schools just for teachers or better schools for governors and legislators. He's talking about better schools for everyone. One percent of Tennessee's population has already had a lot to say about the new schools program. Just think what the 99 percent of us left could do."

Jackson Sun

"We have cried long and loud for better, more meaningful education. The governor has a plan to give us just that and we should support him in bringing that plan to reality."

McMinnville Standard

What Is The BETTER SCHOOLS PROGRAM?

Tennesseans share a common concern—how can we make our state a better place to live?

Members of the legislature are considering the BETTER SCHOOLS PROGRAM, which in the opinion of many people—including Gov. Lamar Alexander—is a very important key in opening the door to the state's brightest days.

Gov. Alexander offered the program to the General Assembly, taking many of its recommendations—including the crucial Master Teacher concept—directly from a year-long study of the state's educational structure conducted by educational leaders and members of the legislature. And now a group of Democrats and Republicans is sponsoring this legislation.

The BETTER SCHOOLS PROGRAM offers what its name implies—but there is so much more. Better and more jobs for Tennesseans, incentive pay and a more professional career for Tennessee's teachers, computer skills, kindergarten for every child and a coordinated focus for vocational education. These points and others are included in the proposal, which will be improved as it goes through the legislative process.

This is a program that you as a concerned taxpayer can—and should—help to create. **You should voice your support for these fundamental improvements by contacting your legislators.** The members of the General Assembly want to know what you think about the program.

If you have questions about the BETTER SCHOOLS PROGRAM, a toll-free hotline is being operated by the State Department of Education five days a week from 8 a.m. until 4:30 p.m., CST. The number is **1-800-342-5005.**

The program is based on 10 points:

- **Basic Skills First.** The teacher-designed new elementary curriculum is in 11,366 classrooms. It establishes 1,300 skills in reading and math, 680 of which *must* be learned. By 1990, *every* child (who is not severely handicapped) should pass the Basic Skills First eighth grade competency test before entering ninth grade.
- **Computer Skills Next.** Every child will know basic computer skills before the ninth grade.
- **Kindergarten for Every Child.** Every child must start school at the kindergarten level, even if the child does not start until age six.
- **More High School Math and Science.** Double the one credit of math and one of science we now require and pay for the extra teachers.
- **Special Residential Summer Schools for Gifted Juniors and Seniors.** Reward academic excellence, not just athletic excellence.
- **Redefine High School Vocational Education Curriculum.** Tie it more closely to the jobs of the 80's and provide equipment.
- **Classroom Discipline.** Create alternative schools for students who disrupt classrooms. State-paid liability insurance for teachers and all other school personnel costs only $2.50 per teacher. We should support teachers, not sue them in court.
- **Put Adult Job Skill Training Under the Board of Regents.** Our 40 community colleges, technical institutes and area vocational schools should have a single overall management. Most of us over 21 will be going back to school to brush up on basic skills and learn computer skills and new job skills.
- **Centers of Excellence at Universities.** Provide first-rate financing for first-rate programs and better overall support for good teaching and research. In the 1980's, good universities will spin off the ideas that spin off new jobs.
  Music in the early grades. With budgets so tight, this is not a top ten priority. But a small state base of support will be provided, and additional money will be raised privately to bolster Tennessee's musical heritage.
- **The Master Teacher Program and Master Principal Program.** This is the heart of the plan.

The Master Teacher Program

Our teachers are good, but they can be better. The same holds true for our principals.

The MASTER TEACHER and MASTER PRINCIPAL PROGRAMS simply offer an opportunity for us to pay our best teachers and best principals more money for doing a top job. This is the same system under which almost all professionals operate, but it is not being done for public school teachers anywhere in the country.

Under the present system, our best teachers are paid no more than the worst, leaving little financial future for our best teachers. And so many of them leave what they enjoy doing most—teaching our children—in order to find true career opportunities, make more money and offer a better future for their families.

The MASTER TEACHER PROGRAM is an incentive pay system that will make teaching a fully professional career, draw our best young people into it, challenge our best teachers to do even better and inspire excellence in our classrooms by rewarding excellence in our teachers.

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TENNESSEE
A FOUR-POINT COMPUTER LITERACY REQUIREMENT PLAN

By the 1985-86 school year, computer literacy will be a requirement for all 7th and 8th graders in the state of Tennessee. Here's how Tennessee Governor Lamar Alexander and the State Department of Education propose to meet that goal.

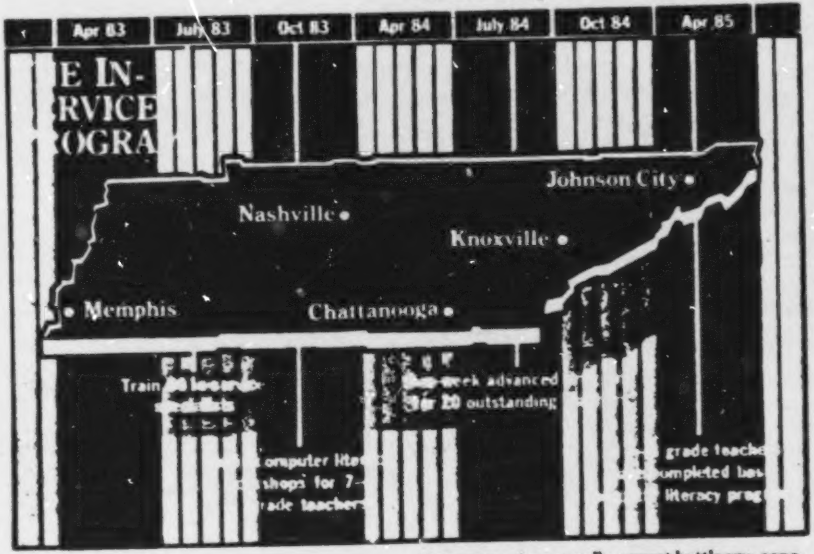
By Lorraine Hopping

Lorraine Hopping is a Contributing Editor on the staff of Electronic Learning.

"We have the brains but haven't developed them. Too many eighth graders don't have eighth-grade skills. Half our adults don't have a high school degree. We have one of the highest high school dropout rates (in the country) . . . We need better jobs because our family incomes are too low, 44th in the country."

With this straightforward introduction to his January 1983 State of Education Address, Tennessee Governor Lamar Alexander announced a ten-point Better Schools Program —Tennessee's gateway to a future of "better skills, better schools, and better jobs."

The first part of Governor Alexander's program—"Basic Skills First"—focuses on reinforcing fundamental reading and mathematical skills. The technology-related section, entitled "Computer Skills Next," has proved to represent an equally urgent battlecry, especially in light of a new State Job Skills Task Force report disclosing that three out of four future jobs will involve computers.



The Computer Skills Next proposal, adopted by the State Board of Education in January 1982, calls for a minimum requirement of 15 hours per year per grade level for all seventh and eighth graders in the state of Tennessee, effective in the 1985-86 school year. During those 30 hours, junior high schoolers will learn the rudimentary computer skills in six strands: Computer Operations, History, Applications, Logic and Problem Solving, Social Impact, and Terminology. The plan also calls for the distribution of nearly 4500 microcomputers and other computer equipment to junior high schools throughout the state.

According to Dr. Carol Furtwengler and George Malo, Directors of Research and Development in the Tennessee Department of Education (DOE), the decision to mandate computer literacy at the seventh and eighth grade level was based on two considerations. First, students who receive fundamental training in computers at the junior high level can then take elective computer courses in high school and graduate all the more prepared to handle the increasingly technical jobs of the future.

Second, the Statewide Microcomputer Advisory Committee—composed of teachers, administrators, librarians, higher education advisors, and State Department of Education employees—determined that because of a general lack of computer courses at the K-8 level, they would be able to develop a comprehensive computer literacy curriculum that flowed downward into the lower grades, once objectives for seventh and eighth graders had been established.

The committee has now taken its first step towards the achievement of all these goals. Its recently completed three-year, four-point plan includes (1) the phasing in of professional training, (2) a computer literacy curriculum, (3) computer equipment, and (4) support services.

Professional Training

The Microcomputer Advisory Committee has recommended training 60 in-service experts, who will then train all 4300 seventh and eighth grade teachers. Of these 4300 teachers, 700 will receive additional training as building-level computer literacy resource teachers and will teach computer literacy to students. In addition, about 100 DOE employees and university professors will receive training in computer literacy in order to run the various support services offered by the state.

By 1985, nearly all seventh and eighth grade teachers will be computer literate and

(Continued)

Illustration by Lance Miyamoto © 1983

(Continued)

state computer centers set up across Tennessee will be fully staffed and ready to train in-coming junior high teachers and teachers of other grades.

To assist schools that might not for various reasons be able to take immediate advantage of the Computer Skills Next training program, the state has published a microcomputer guide on computer applications, hardware and software selection, terminology and additional computer resources.

Computer Literacy Curriculum

The Microcomputer Advisory Committee has developed a preliminary computer literacy curriculum for grades K-8 to be used in a pilot Computer Skills Next program in January 1984. The curriculum specifies 20 to 50 objectives for each of the six strands. The objectives are categorized as instruction, review, or mastery for K-3, 4-6 and 7-8 grade levels.

For example, the objective listed under computer operations as "identify input devices" would be divided into three terms: instruction for grades K-3, review during grades 4-6, and mastery in grades 7-8. The curriculum will undergo several revisions and additions after teachers have been trained and the pilot programs have ended their first quarter of operation.

As the program progresses and students begin their computer instruction at earlier levels, the 7-8 and 4-6 grade objectives will become more challenging.

In addition, the State DOE is preparing standards for elective high school courses in computer science and computer applications, allowing junior high schoolers who have mastered the basics of computers to pursue the field at a higher level. (Although several Tennessee high schools already offer elective computer courses, they vary widely and are limited by the equipment available.) As yet, neither the DOE nor Governor Alexander has announced any plans to require computer literacy on the secondary level.

Equipment Acquisition

The DOE has recommended that schools acquire computers in a 30:1 student/computer ratio. With a current enrollment of about 133,050 seventh and eighth graders, the state is prepared to help equip schools with a total of 4,435 computers at an average cost of about $1500 each. Although no formal budget had been drawn up at the time of this writing, the state plans to pay about two thirds of the cost for microcomputers going into junior highs, with the schools contributing the other third.

Other schools will also get a helping hand from the DOE; they will be able to purchase microcomputers from a state contract at a lower price than they would pay for equipment they purchased themselves. (Schools may also purchase equipment outside of the state contract, following local regulations and policies on competitive bidding.)

The DOE will also provide 15 computers, two scanning devices, and two printers for each of the state's five educational computer centers in Nashville, Knoxville, Memphis, Johnson City, and Chattanooga.

To raise funds for the entire Better Schools Program, Governor Alexander has proposed a 5/8 percent increase in sales tax over the next few years. The tax would generate about $210 million, part of which would be allocated to the Computer Skills Next program.

In a show of grass roots support, some local parent and teacher organizations have staged Walkathons to raise money for the Governor's program. One successful event in Tullahoma garnered nearly $50,000 in a single day.

Support Services

In the initial phases of the Computer Skills Next program, the state will play a large role in the training of professionals, developing of curricula, and selecting and purchasing of computer equipment. In order to do this efficiently, the state has initiated several support services and proposed others.

Operations now in existence include:

- A quarterly Microcomputer Advisory Committee newsletter
- A microcomputer lab equipped with Apple, Radio Shack, Monroe, and Texas Instruments computers available for reviewing software
- A software specialist for local assistance at district service centers
- Membership in Project BEST (Basic Education Skills through Technology) for electronic network information from other schools; and in the Minnesota Educational Computing Consortium (MECC), for access to that organization's software packages
- Participation in Project SLATE, a federally-funded program to provide educators with free technical assistance in setting software and learning technology standards and priorities
- A Resource Bank, listing people who can provide technical assistance to school systems
- Project SUPPORT, an information retrieval service to assist K-12 educators in staying current with educational research
- Microcomputer workshops for local school system personnel.

The Microcomputer Advisory Committee is currently planning for six software clearinghouses to evaluate and purchase software and copy public domain programs for distribution among the school systems. Each clearinghouse will focus on a particular area, such as basic skills, administration, vocational education, etc.

In addition, the committee is establishing a support staff for each of the five state computer centers, and will appoint a Training Coordinator and a Director of Computer Literacy to oversee their operations. By this summer, the state will also have set up a toll-free hotline for questions about hardware, software, and computer literacy in general.

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TIMELINE: TENNESSEE'S FOUR-PART COMPUTER LITERACY PLAN

	Professional Training Program	Computer Literacy Curriculum	Hardware Acquisition	Support Services
SPRING 1983	• Develop program for training trainers • Select 12 core instructors to train 60 workshop trainers • Review two-week training program for trainers • Develop training materials for training packets	• Begin developing teacher guide for computer literacy • Refine K-8 curriculum and objectives; at the literacy level, students will have a "working knowledge of computer functions and simple programming operations" • Begin development of standards for elective secondary computer courses (programming and applications in all subject areas)	• (March 1) Proposed budget for entire School Improvement Program before state legislature • Evaluation of equipment needs (30 7-8th graders per micro or 4,435 total computers) • Determine criteria and plan of action for acquiring hardware through vendor demonstrations and working models: debate single brand state-wide purchase versus multiple brand purchases based on individual school needs; low-priced versus medium-priced versus high-priced machines, etc.	• Study software clearinghouse models and gather information • Hire a hardware specialist (Chapter II funds); Director of Computer Literacy (responsible for choosing schools for pilot, second pilot and final phase of program, creating detailed "working" plans, and overseeing State Microcomputer Committee and State DOE employees); Training Coordinator (responsible for all training programs, resource materials, objectives) and secretary
SUMMER 1983	• Two-week "training of trainers" workshops in Memphis, Nashville, Knoxville for 45 State DOE employees and 15 professors	• Complete teacher guide for computer literacy • Outline secondary computer courses and establish state-wide standards; at the proficiency level, students learn "the complexities of computer operations, one advanced programming language, and complex sociological issues involving computers"	• Purchase 15 computers, two scanning devices, and two printers for each of the five state computer centers. Acquire additional space and furniture for centers to handle training programs	• Establish complete staff to implement total training and computer literacy program • Budget for staff expenses (travel, telephone, materials, supplies) • Establish toll-free hotline for questions on hardware, software, computer literacy, etc.
FALL 1983	• 50 two-day computer literacy workshops at five state computer centers in Johnson City, Knoxville, Chattanooga, Nashville, Memphis for first ⅓ (1450) of 7-8th grade teachers (participants in the first pilot program in Jan '84) • 15 one-week computer literacy workshops at centers for first ⅓ (250) of 7-8th grade computer literacy resource teachers (one teacher per building to teach computer literacy) • Review/ and revise training program based on trainers' and first ⅓ of teachers' experiences	• Revise computer guide for computer literacy • Organize objectives and curriculum based on outcome of training sessions and teacher input; break down objectives into grade levels, instructional/review/mastery categories and awareness/programming categories	• All centers operational for teacher training • Provide funds to schools participating in first pilot program (first ⅓ of all middle schools) for hardware purchase (state pays about 66 percent of cost)	• Establish six software clearinghouses based on data gathered from models (programs divided by grade level, by type, by administrative versus instructional, by subject area, and by public domain versus commercial software)
SPRING 1984	• 50 two-day workshops at centers for second ⅓ (1450) of 7-8th grade teachers • 15 one-week workshops for second ⅓ (250) of 7-8th grade computer literacy resource teachers	• Begin pilot program in ⅓ of middle schools (Jan. '84) for 7-8th graders only • Topic areas of curriculum are computer history, operations, applications, logic and problem solving, social impact and vocabulary • Total of 30 instructional hours for 7-8th graders	• Planning for new fiscal year (July 1): ⅓ of state budget for Computer Skills Next spent in 1983-84 fiscal year; ⅔ to be spent in 1984-85 fiscal year	• Clearinghouses fully operational in reviewing, evaluating and copying (public domain) software for distribution to schools; ameliorating inter-school communications about software needs; possibly establishing a state-wide network bulletin board
SUMMER 1984	• Two-week advanced program in Nashville for all 60 trainers to update information • Two-week advanced training program in Nashville for 20 outstanding teachers	• Revise curriculum based on results of pilot program • Refine teaching strategies and computer activities • Coordinate resources of local systems and computer literacy objectives	• Provide funds to second ⅓ of middle schools (for second pilot program) hardware purchase • Budget for maintenance and repair of computer center equipment and overhead for computer centers' physical facilities	• Continuation of staff development and clearinghouse functions
FALL 1984	• 50 two-day workshops at centers for final ⅓ (1450) of all 7-8th grade teachers • 15 one-week workshops at centers for final ⅓ (250) 7-8th grade computer literacy resource teachers	• Second pilot program with additional ⅓ of middle schools (grades 7-8 only) using revised curriculum • State-defined standards for elective secondary school courses become operational in some schools	• Provide funds to final ⅓ of middle schools for hardware purchase	• Continuation of staff development and clearinghouse functions
SPRING 1985	• All 7-8th grade teachers have participated in basic computer literacy training program • ⅓ of those teachers are trained as building level computer literacy resource teachers • Workshops scheduled to train in-coming teachers • Trainers convene to evaluate program and update skills	• Computer literacy program operational in all middle schools using revised curriculum • Schools in first pilot program begin raising level of skills and concepts on 7-8th grade level • Phasing-in of K-6 curriculum (fully operational on K-8 level by 1988)	• All 7-8th grade schools use hardware on a 30 student per microcomputer ratio • State computer centers are fully operational as teacher training facilities for computer literacy	• Possible operation of network with software houses as hosts • Once computer literacy program is self-operational (1988 or earlier), filtering of support staff into other duties

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TENNESSEE
STATE DEPARTMENT OF EDUCATION
OFFICE OF COMMISSIONER
NASHVILLE 37219

March 23, 1983

Dear Fellow Educators:

Immediately following the Governor's State of Education Address, I forwarded to you copies of the initial technical reports which explained the MASTER TEACHER PROGRAM and the MASTER PRINCIPAL PROGRAM. Since that time, the MASTER TEACHER—MASTER ADMINISTRATOR bill has been introduced and amendments have been negotiated and announced.

I am enclosing, for your review and information, a draft report which summarizes the MASTER TEACHER—MASTER ADMINISTRATOR PROGRAM. This draft reflects the changes announced March 17, 1983, most coming as a direct result of input by teachers across the state. The most significant changes reflected in the revised report include the following:

1. Every teacher except the beginning apprentice teacher will be eligible for a $1,000.00 professional teacher supplement under this new program. This will be phased in on a seniority basis over a three-year period beginning 1984-85.
2. With the addition of the new supplement for professional teachers joining the program, an estimated 87 percent of all teachers will be eligible for the special higher pay.
3. The Governor's four-year plan calls for a 20% increase in the state salary base. *The state incentive supplement is in addition to this 20% increase in the state salary base.*

As other changes and/or amendments are made, you will be notified.

Many of you have asked about the evaluation component of the MASTER TEACHER—MASTER ADMINISTRATOR PROGRAM. After an initial draft of the evaluation criteria, standards and procedures is developed, regional meetings will be held so that representative teachers from the various school systems may assist in finalizing these evaluation components.

The toll-free "hot-line" will continue to be available, with persons on duty between the hours of 8:00 a.m. and 4:30 p.m. Monday through Friday (Central Standard Time), to answer questions you may have regarding the program. The number is 1-800-342-5005. We welcome your comments.

Sincerely,

Robert L. McElrath

Robert L. McElrath
Commissioner

TENNESSEE BETTER SCHOOLS PROGRAM

Better Schools will mean better jobs and higher incomes for Tennesseans. The BETTER SCHOOLS PROGRAM is designed to promote excellence in education. It includes ten points: 1) BASIC SKILLS FIRST, 2) COMPUTER SKILLS NEXT, 3) Kindergarten for Every Child, 4) More High School Math and Science, 5) Special Residential Summer Schools for Gifted Juniors and Seniors, 6) Redefinition of High School Vocational Education Curriculum, 7) Classroom Discipline, 8) Adult Job Training under one Board, 9) Centers of Excellence at Universities and 10) The Master Teacher-Master Administrator Program. This document presents an outline of the Master Teacher-Master Administrator Program.

MASTER TEACHER MASTER ADMINISTRATOR PROGRAM

Introduction

The Master Teacher-Administrator Program is an incentive pay system that will improve the quality of elementary and secondary education in Tennessee by strengthening the knowledge, preparation, incentives, professionalism, and rewards of all educators. The program protects the benefits and positions of every currently employed teacher or administrator. In this document the term "teacher" includes classroom teachers and other certified building level personnel such as librarians and resource teachers. The term "administrator" is used in the generic sense to mean a building level administrator or a central office supervisor/administrator other than the superintendent. Entry into the program is optional for currently employed professionals. Any person certified and employed full-time prior to July 1, 1983, and who becomes certified and employed under this program prior to the expiration of their first certificate issued by the State Certification Commission, may elect to renew the certificate previously issued by the State Board of Education. This option, however, may be exercised only once. All employees certified after the effective date of the Better Schools Master Teacher-Master Administrator Act will be in the new program.

Framework

The Master Teacher-Master Administrator Program will operate under the auspices of the State Certification Commission and three Regional Commissions. The State Certification Commission will be composed of 13 members and will be responsible for standards and criteria for the certification of all educators under this program. Three Regional Commissions, composed of 9 members each, will exist in the grand divisions of the state and will review applications, assign evaluation teams, and make recommendations concerning certification to the State Certification Commission.

An Interim Commission composed of 13 members will be established for one year to select the initial participants for the program. Members of the Interim Commission will include: the Teacher of the Year for the present year and the past three years, the president and president-elect of the Tennessee Education Association, the presidents of the Tennessee Organization of School Superintendents, Tennessee School Boards Association and Tennessee Association of Supervision and Curriculum Development, the Commissioner of Education, and three lay persons. The Interim Commission will be convened immediately by the Commissioner of Education to begin work on procedures and guidelines.

Master Teachers and Master Administrators will be assigned by the Regional Commission to conduct on-site observations of candidates applying for the program. The evaluation of classroom teachers may include observation in such areas as classroom management, teacher instructional behavior, and planning. The observation of principals may include such areas as the identified goals and objectives of the school, school leadership, and school climate. Observations of special personnel and other administrators will focus on criteria related to specific job performances.

The selection and evaluation processes will include appeal rights for teachers and administrators. Due process will be accorded all candidates and participants in the Master Teacher-Master Administrator Program.

In selected instances certificates may not be renewed or a person may not wish to continue in the program at their present certification level. In such situations provisions are available for reentry at other levels.

The State Department of Education will sponsor the Tennessee Principal-Administrator Academy to instill and reinforce instructional and supervisory leadership for educational effectiveness. The Academy is not a single institution, but it is an organizational framework for a wide array of educational and training programs for school leaders. The Academy will be conducted at various locations in the state.

CAREER PATHS FOR TEACHERS AND ADMINISTRATORS

APPRENTICE TEACHER

Entry Routes:

- Completion of a teacher training program and recommendation by an approved institution of higher education
- Trade shop personnel who meet appropriate standards

Qualifications/Requirements:

- Student teaching
- Successful completion of the National Teacher's Examination
- Bachelor's Degree

or

- Employment standards required for trade shop personnel

Certificate:

- Three-year
- Nonrenewable

Contract/State Salary:

- Regular school term of 200 days
- State salary schedule based on training and experience

PROFESSIONAL TEACHER

Entry Routes:

- Three (3) years as an apprentice teacher
- A currently certified teacher with three (3) or more years of experience who wishes to enter the new career paths

Qualifications/Requirements:

- Knowledge of subject matter
- Acceptable student achievement
- Participation in professional growth activities
- Observation by evaluation team/teacher interview

Certificate

- Five-year
- Renewable

Contract/State Salary:

- Regular school term of 200 days
- State salary schedule based on training and experience *plus* state incentive pay supplement of $1,000

SENIOR TEACHER

Entry Routes:

- Three (3) to five (5) years as a professional teacher
- A currently certified teacher who has eight (8) or more years of appropriate experience

Qualifications/Requirements:

- Acceptable student achievement
- Participation in professional growth activities
- Observation by evaluation team/teacher interview
- Exceptional classroom practice
- Capability and willingness to assume additional duties
- Evaluations by local supervisors and administrators

Certificate:

- Five-year
- Renewable

Contract/State Salary:

- Contract for 10 months (200 days)—*current teachers only*
  -State salary schedule based on training and experience *plus* state incentive pay supplement of $2,000
- Contract for 11 months (220 days)
  -State salary schedule based on training and experience *plus* state incentive pay supplement of $4,000

MASTER TEACHER

Entry Routes:

- Five (5) years as a senior teacher
- A currently certified teacher who has twelve (12) or more years of appropriate experience

Qualifications/Requirements:

- Acceptable student achievement
- Participation in professional growth activities
- Observation by evaluation team/teacher interview
- Classroom effectiveness
- Capability and willingness to assume additional duties
- Evaluations by local supervisors and administrators
- Skill in supervising, evaluating, and improving the performance of other teachers

Certificate:

- Five-year
- Renewable

Contract/State Salary:

- Contract for 10 months (200 days)—*current teachers only*
  -State salary schedule based on training and experience *plus* state incentive pay supplement of $3,000

MASTER TEACHER QUALIFICATIONS, *Continued*

- Contract for 11 months (220 days)—*current teachers only*
  - -State salary schedule based on training and experience *plus* state incentive pay supplement of $5,000
- Contract for 12 months (240 days)
  - -State salary schedule based on training and experience *plus* state incentive pay supplement of $7,000

PROVISIONAL ADMINISTRATOR

Entry Routes:

- Successful Completion of Internship
- Master Teacher's Certificate
- Senior Teacher's Certificate *and* two years as a senior teacher
- One year as a successful administrator in a comparable position in another state
- Presently a Tennessee teaching or supervising principal or a central office supervisor/administrator
- Students enrolled prior to July 1, 1983, in educational administration/supervision programs who complete the program and enter the Master Administrator Program by July 1, 1986.

Qualifications/Requirements:

- A minimum of a master's degree in Educational Administration/Supervision or in appropriate specialty
- Administrative or supervisory skill assessment
- Participation in Principal-Administrator Academy
- Observation by master administrator

Certificate:

- Three-year
- Nonrenewable

Contract/State Salary:

- 11 months
- Appropriate administrator salary schedule or, if senior or master teacher, current salary

SENIOR ADMINISTRATOR

Entry Routes:

- Provisional Administrator with three years successful experience
- Presently either a Tennessee supervising principal or central office supervisor/administrator with four or more years experience

Qualifications/Requirements:

- Four years (within the last seven years) of successful experience as an administrator
- Student building level or systemwide achievement scores
- Teacher assessment
- Successful school/community relations
- Professional growth activities
- School improvement and staff development
- Observation by master administrators
- Participation in Principal-Administrator Academy
- School climate indicators

Certificate:

- Five-year
- Renewable

Contract/State Salary:

- 11 months (minimum)
- Appropriate administrator salary schedule based on training and experience *plus* state pay supplement of $4,000.

MASTER ADMINISTRATOR

Entry Routes:

- Senior Administrator with at least five years successful experience
- Presently either a Tennessee supervising principal or central office supervisor/administrator with five or more years experience

Qualifications/Requirements:

- Five years (within the last 8 years) of successful experience as an administrator
- Student building level or systemwide achievement scores
- Teacher assessment
- Successful school/community relations
- Professional growth activities
- School improvement and staff development
- Observation by master administrator
- Dissemination of school and systemwide policies
- Participation in Principal-Administrator Academy
- School climate indicators

Certificate:

- Five-year
- Renewable

Contract/State Salary:

- 12 months
- Appropriate administrator salary schedule based on training and experience *plus* state pay supplement of $7,000.

IMPROVEMENTS MADE BY LEGISLATIVE SPONSORS OF THE MASTER TEACHER—MASTER ADMINISTRATOR ACT

Concern with Original Proposal	Change
1. Good teachers would have to wait eight or more years to receive the special incentive pay supplements. Many would not want to wait that long.	1. Every teacher except the beginning Apprentice Teacher will be eligible for a $1,000 Professional Teacher supplement under the new program. This will be phased in on a seniority basis over a three-year period beginning 1984-85. This will be in addition to the teacher's regular salary.
2. The majority of teachers would not receive an incentive pay supplement from the state. Only 35 percent would receive the special state-paid supplements.	2. With the addition of the new supplement for Professional Teachers joining the program, an estimated 87 percent of all teachers—those with three or more years experience—will be eligible for the special higher pay.
3. The 10 percent cap on state-paid Master Teachers may be too restrictive, especially for smaller school districts.	3. The 10 percent limit on state-paid Master Teacher positions has been increased to 15 percent. The 25 percent limit for state-paid Senior Teachers remains the same. Therefore, 40 percent of all teachers in a school system could now receive one of the two higher supplements.
4. Not all outstanding teachers could work year-round or even 11 months. That means they could not be Master or Senior Teachers if they must work 11 or 12 months. This is unfair for teachers with children at home or who must be away from school in the summer months for other reasons.	4. The supplement formula has been changed so the Master Teacher will now have an option of working on a 10-, 11- or 12-month contract. The Senior Teacher could work either on a 10- or 11-month contract. State-paid supplements will vary according to the length of the contract.* The 10-month Senior Teacher will receive a $2,000 supplement; the 11-month Senior Teacher $4,000. The Master Teacher will receive a $3,000 supplement on a 10-month contract, $5,000 on 11 months, and $7,000 on 12 months. ***Note:** This option is available only to those persons who were certified as a teacher for the first time **and** employed as a teacher full time **prior to** July 1, 1983. Persons certified as a teacher for the first time **on** or **after** July 1, 1983, **and** employed as a senior or master teacher, will be required to enter an 11-month contract as a senior teacher and a 12-month contract as a master teacher.
5. The corresponding cap on the number of state-paid Senior and Master Principals and Supervisors may also be unrealistic.	5. The 25 percent limit on state-paid Senior Principals and Supervisors has been increased to 35 percent. The 10 percent limit for state-paid Master Principals and Supervisors has been doubled to 20 percent. The Senior Principal and Senior Supervisor supplement will be $4,000. The Master Principal and Master Supervisor supplement will be $7,000.
6. The size of the supplements eventually may need to be increased.	6. The legislation now provides that the General Assembly will review the supplements **at least** every four years.
7. The process by which teachers will be evaluated is too vague. We haven't seen the standards that will be used to judge effective performance in the classroom.	7. The legislation has been extensively revised and expanded to spell out the evaluation criteria and process in greater detail. This change is based on the relevant portion of the bill developed by the TEA. Even further details will be developed by the Interim Commission.
8. The appeal or grievance procedure called for in the bill is vague and inadequate.	8. The section of the bill providing a review process for teachers who are denied a higher level of certification has been extensively expanded with a detailed procedure for appeal and review. For example, the Commission could now extend a certificate for an additional year while a decision is being reviewed.

Continued

Concern with Original Proposed	Change
9. A teacher now on the job who decides to enter the new system may want to get out later and return to the old certification system.	9. The program will now include a "toe-in-the-water" provision. Presently-employed teachers may enter the new system but return to the old system later. Entrance into the new program is strictly voluntary for any teacher now teaching.
10. Master Teachers who are hired by a local school board one year might be unfairly treated if that board chose to employ someone else in the same slot the following year.	10. Once a teacher qualifies for and receives an incentive supplement as a Professional, Senior or Master Teacher, he or she cannot be denied the supplement unless there is cause for dismissal, failure to maintain the certificate, or a personal decision not to perform the extra duties required of the Senior or Master Teacher.
11. Won't the Commissioner of Education have too much discretion in regard to the cap that is placed each year on the number of state-paid Senior and Master Teachers a local system can employ?	11. The limit on the number of state-paid incentive supplements would be reached in 1986-87. Thereafter, every school system will be guaranteed a state-paid complement of 15 percent Master Teachers and 25 percent Senior Teachers. In addition, the legislation now more clearly relates any interim limitations to the actual revenues that will be produced by the phased-in sales tax increase.
12. Master Teachers should be out of the classroom as little as possible. The minimum of 65 percent of time to be spent in the classroom is too low.	12. Master Teachers could be out of the classroom no more than 10 days out of the school year. Senior Teachers could be out of the classroom no more than five days per school year.
13. The 21-member State Master Teacher Certification Commission is too cumbersome. Its large size may actually make it more vulnerable to control by the State Department of Education.	13. The size has been cut from 21 members to 13. Appointees will be subject to confirmation by both houses of the General Assembly. They will have more authority to set standards and to certify all teachers under the new program.
14. The composition of the extremely important Interim Commission is too vague.	14. The Interim Commission's 13 members will include the current "Teacher of the Year"; the three most recent past Teachers of the Year; the president and president-elect of the TEA; the presidents of the Tennessee Organization of School Superintendents, the Tennessee School Boards Association and the Tennessee Association of Supervision and Curriculum Development; the Commissioner of Education, and three distinguished lay persons.
15. No provision is made to review and ultimately increase the standards in the colleges of education that train the new teachers.	15. The State Board of Education, the new Certification Commission, and the Tennessee Higher Education Commission over the next two years will study the adequacy of the teacher training programs—including curriculum, faculty and other factors—and report these findings to the Legislature.

Estimated cost of Program in 1986-87: Original Program $116,427,000 Improved Program $116,024,000

This public document was promulgated at a cost of $2,536.42 or 5¢ per copy to inform educators and members of the public about significant changes in the Master Teacher-Master Administrator Act. Printing Auth. No. 2059; 50,000 copies.

Appendix F

Handouts to West Virginia Effective Schools Presentation

DRAFT: Products for High Expectations

School: Petersburg High School Element: High Expectations

Definition: High expectations are positive feelings held by staff, students and administrators that (1) all students have the potential to learn and (2) the staff has the capacity to lead students through the learning process.

Indicator:	Measures:
1.0 The principal takes the leadership for setting high expectations for himself and the staff.	1.1 The principal involves the total staff in establishing and regularly reviewing high expectations for his and the staff's performance. 1.2 Expectations are written and communicated to all. 1.3 The principal and staff accept the expectations they set for themselves. 1.4 The principal uses the established expectations as a basis for personnel evaluations. 1.5 Staff is expected to be task-oriented and well-organized and to demand high student achievement. 1.6 Primary efforts are spent on high expectations dealing with areas over which the school has control.
2.0 Teachers provide equal opportunity to all students for class response and feedback.	2.1 All students in the class are given regular opportunities to respond. 2.2 Teachers are encouraged to become familiar with strategies that provide all students the opportunity to participate in class. 2.3 Teachers use techniques, such as random questioning, to assure that all students have equal opportunity to respond. 2.4 Students feel that all students have the opportunity and are expected to participate in classroom activities. 2.5 Appropriate praise is equitably distributed among all students.
3.0 The total school staff is aware that the expectations they hold for a child may affect that child's performance.	3.1 The principal and staff support each other in demonstrating through programs and actions that positive rather than negative expectations for all students. 3.2 The school staff is aware of behaviors which communicate their expectations to students.
4.0 Teachers expect all students to meet minimum specified objectives.	4.1 Minimum objectives for each class are identified for all areas. 4.2 These objectives are communicated to students and parents in an understandable fashion. 4.3 Classroom activities are organized so that all students achieve minimal objectives.

School: Petersburg High School Element: High Expectations

Indicator:	Measures:
	4.4 The staff believes that each student should achieve these minimum objectives.
	4.5 Evaluation is used to assess each child's mastery of minimal objectives.
	4.6 Follow-up activities are provided for students who have not mastered the objectives.
	4.7 The staff feels a collective accountability for student learning.
5.0 Teachers assume the responsibility for encouraging and leading students to do their best.	5.1 The specified objectives for each class/ content area reach well beyond the minimum level.
	5.2 Teachers believe that each student should be challenged to achieve at an optional level.
	5.3 Students perceive that the work they do is neither exceptionally easy nor exceptionally difficult.
	5.4 Teachers organize lessons so that each student is challenged.
	5.5 Teachers believe that they are responsible for student learning as well as teaching.
6.0 Curricular materials are selected to achieve specified objectives.	6.1 Before purchase, textbooks and other instructional materials are reviewed to assure that their content is in alignment with specified instructional objectives.
	6.2 Selection of textbooks and other instructional materials is based primarily on how well they are aligned with the curriculum.
7.0 The total school staff is expected to interact with students in a caring, supportive manner.	7.1 Students perceive that teachers care about them.
	7.2 Students do not perceive that staff cares more for some students than others.
	7.3 Teachers are aware of actions which overtly and covertly indicate personal regard to students.
	7.4 Teachers equitably demonstrate personal regard to all students.
8.0 The school staff is aware of student characteristics which may influence their expectations of students.	8.1 Staff has received information (through journal articles, inservice, etc.) regarding factors which influence student expectations.
	8.2 Staff can identify several student characteristics that may influence expectations.
9.0 Students expect and receive specific, immediate and meaningful feedback for their performance.	9.1 When academic praise is given, it is task-related rather than person related.
	9.2 Teachers let students know immediately why verbal and written work is correct or incorrect.

School: Petersburg High School   Element: High Expectations

Indicator:		Measures:	
		9.3	Students perceive that positive performance is rewarded and that negative performance goes unrewarded and is corrected.
		9.4	Teachers receive information and training (through inservice, journals, etc.) in appropriate use of feedback.
10.0	Students feel that success can be achieved through their efforts.	10.1	Students feel that school is a place where success can be experienced.
		10.2	Students feel that they have the skills necessary to achieve that success.
		10.3	Students are aware of those objectives which they are expected to master for each subject area.
		10.4	Students believe that if they have difficulties in meeting objectives that assistance will be provided.
		10.5	Students feel that work rather than luck (or other extraneous items) leads to achievement.
		10.6	Students feel that "it's what you do" not "who you are" that leads to academic success.
		10.7	Students perceive that the staff treats all students equitably.
		10.8	Students feel that if they complete assigned activities that instructional goals will be accomplished.
11.0	The staff works with parents to convey the parents' responsibility in promoting student achievement.	13.1	Suggestions for parental involvement in promoting student achievement are published and disseminated.
		13.2	The school has established procedures/activities to convey the importance of the parents' role in the educational process.
		13.3	Parents feel that two-way communication between them and the school is in operation.

STATED COUNTY GOAL ____: ____

____

STATED COUNTY PROGRAM STATEMENT ____: __________________________________

____

ALTERABLE ELEMENT (CIRCLE ONE): POSITIVE SCHOOL CLIMATE STRONG INSTRUCTIONAL LEADERHIP

HIGH EXPECTATIONS EMPHASIS ON ACADEMICS AND BASIC SKILLS

FREQUENT MONITORING

TARGET INDICATOR: ____

____

IMPROVEMENT OBJECTIVE(S): ____
(STATE IN MEASURABLE TERMS FROM DEFINED INDICATOR MEASURES)

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STATED IMPROVEMENT OBJECTIVE: ______________________________

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PROCESS AND PROCEDURES	TIMELINE	RESPONSIBILITY

Appendix G

Handouts to Cohen Presentation

A Special Section

Computer Courseware
Development and Evaluation

Criteria for the Evaluation of Microcomputer Courseware

Vicki Blum Cohen

Introduction

As the use of microcomputers proliferates in educational settings, there is a great need to determine what exactly is "good" instructional courseware and what is inadequate. With small, cottage-industry firms being the most common producers of instructional software (courseware), often our educational lessons on the microcomputer are dependent upon what an enterprising programmer considers good instructional design. Courseware packages are frequently developed in a pragmatic or "artistic" fashion, without any systematic statement of objectives or analysis of the learning tasks required. As a result, programs of questionable educational value flood the market; space-war games and How-to-Compute-Your-Taxes tend to be the most common programs available. When a true educational software package emerges, there are no accepted criteria as to what comprises an effective program for instructional purposes.

At present, no widely agreed-upon standards or criteria exist which would help to define what an effective software program is. Developing standards and evaluation procedures has been a difficult problem in that there has been a wide range of opinions over what the "ideal courseware product" should be and what we should be aiming for in the way of courseware as technology becomes more capable of extending its potential (Roblyer, 1981). In order for these standards or criteria to be effective guidelines, it is necessary to isolate those attributes unique to the microcomputer and those that should be included in the design of all instruction. The two types of attributes would then become a checklist for those evaluating or developing courseware for the microcomputer; they would help to pinpoint those elements that are basic characteristics of effective instruction and those characteristics necessary to consider when utilizing the microcomputer as an instructional tool. This list would help to ensure quality control of courseware.

When trying to determine those criteria which should be considered in the design of instructional software, a few issues become apparent.

First, it is important to differentiate between the two kinds of attributes that need to be considered: (1) those that are generic to all media of instruction, and are recommended strategies to use for instructional design; and (2) those that are necessary to consider specifically in the design of software for the microcomputer and potentially affect learning outcomes in a unique way.

Second, each attribute should be clearly observable so that during the evaluation process it is possible to determine if the attribute has been included in the design of the program. This means that an evaluator or developer should be able to look at the courseware and quickly determine if the attribute has been included in the program's design.

Table 1 lists the two kinds of attributes that should be used in development and evaluation: (1) those that are generic to instructional design, and (2) those that are necessary to consider in the design of courseware for the microcomputer. These attributes were developed during a full year by a review team that was evaluating and examining microcomputer courseware being marketed for school use. During the course of this evaluation project, at the Microcomputer Resource Center at Teachers College, Columbia University, this review team developed a strong sense of what "minimal" standards were and what desired but realistic standards should be. The team

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was composed of two instructional designers, two subject-matter experts, and two technical experts—a recommended team to have in the design and/or evaluation of courseware (Roblyer, 1981).

It should be noted when looking at Table 1 that there is no one-to-one correspondence between these two lists, and that item number one in the "Generic to Instructional Design" list bears no relation to item number one in the "Necessary for Design of Courseware" list. These two lists represent what the review team felt were desirable and realistic attributes that most software programs should contain.

Each attribute that is necessary to consider in the design of courseware for the microcomputer will be discussed briefly below.

Table 1

Necessary Attributes to Consider
in Designing Courseware for the Microcomputer

Generic to Instructional Design

1. Target audience specified
2. Learner entry competencies specified
3. Rationale, goals, and objectives specified
4. Objectives stated behaviorally
5. Objectives stated in terms of the learner
6. Objectives include higher-order skills
7. Learners informed of objectives
8. Range and scope of content adequate to achieve program's intents
9. Preinstructional strategies used:
    - Pretests
    - Advance organizers
    - Title at beginning of unit
10. Instructional text formatted for easy reading
11. Concept learning employed in instructional approach
12. Vocabulary used appropriately for learner
13. Graphics embedded in content
14. Graphics used appropriately
15. Demonstration of the exercise provided
16. Teacher's Manual provided
17. Instructions clearly stated for student
18. Evaluation components provided

Necessary for Design of Courseware

1. Curriculum role used:
    - Adjunct
    - Mainline
    - Management only
    - Other
2. Mode of interaction employed:
    - Drill and Practice
    - Tutorial
    - Game
    - Simulation
    - Problem-Solving
3. Student sequenced through the content:
    - Nonlinear
    - Varied by teacher/student
4. Instructional text formatted for screen display
5. Graphics embedded in the content
6. Graphics used appropriately
7. Cues and/or prompts used
8. Action occurs on the screen
9. User control granted to learner
10. Computer-Managed Instruction employed
11. Feedback used appropriately
12. Records stored on magnetic devices for future retrieval
13. Content designed to be altered
14. Random generation used
15. Packaging designed for component parts
16. Teacher's Manual and Student Manual provided
17. Technical design used:
    - Quick response time
    - Quick loading time

Curriculum Role Used

The role that the microcomputer will play-in the classroom is unique, and it cannot be viewed as just another medium of instruction. Rather, the computer has the potential of modifying the curriculum and absorbing much of the labor-intensive responsibilities which the teacher has traditionally maintained. By reducing many of the time-consuming tasks that the teacher is required to do, and by functioning as a surrogate "tutor," the microcomputer can lower the teacher-pupil ratio and allow a greater amount of individualized instruction to occur. Courseware packages for the microcomputer can function in three capacities in the classroom:

1. As supplementary "adjunct" applications whereby teachers use them as supplements to the regular curriculum. Problem-solving, simulation, and drill and practice are examples of adjunct applications of the microcomputer.

2. As a "mainline" or basic course that is used to teach students a complete curriculum unit. No input from the teacher is needed, and the microcomputer functions as a "tutor" teaching concepts and providing drill and practice on these concepts. Usually, records are maintained and all instruction is managed by the computer.

3. As a management system whereby all the records for a curriculum unit are stored and managed by the computer. No insruction is provided with this application of the computer; its role is to provide accurate records on whether each student has mastered specific objectives and pinpoint the level at which each student is functioning.

Other applications of courseware programs for the microcomputer might be:

1. As a pre-programmed authoring device for teachers and students to create their own programs.

2. As a programming course on computer literacy whereby students learn how to program the computer.

3. As an assessment device whereby tests are given on the microcomputer, and the student's responses are immediately scored and reported to the teacher.

Mode of Interaction Employed

How a courseware program for the microcomputer functions in the curriculum is dependent upon how the student interacts with the subject-matter and computer. The various modes of interaction are unique to the microcomputer in that the student is able to interact directly with the computer and receive immediate feedback after the response. The five types of interactions that can be employed using the microcomputer are:

(1) *Drill and Practice*, which is designed to supplement the regular instruction received elsewhere by providing a means by which concepts presented and developed in the classroom can be practiced and refined at the computer.

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(2) *Tutorial*, which is intended to stand alone as an instructional entity in the curriculum and is not used to supplement classroom teaching, as is drill and practice. This requires that the program teach rules and concepts embodied by the subject matter, evaluate the student's comprehension of these concepts, and provide practice in the specific skills taught.

(3) *Gaming*, which is a situation where students have to know certain facts, perform certain skills, or demonstrate mastery of certain concepts; winning depends upon mastery of these cognitive skills.

(4) *Simulation*, which is where certain elements of social or physical reality are abstracted and the student must interact with and become part of that simulated reality. Simulations should be used after basic concepts and principles are learned, to integrate them into the context of a meaningful problem.

(5) *Problem-solving*, which involves the combining of previously learned rules into a new higher-order rule that solves the problem and generalizes to an entire class of stimulus situations embodying other problems of the same type (Gagné, 1977).

The five modes of interaction listed above are those most frequently used in courseware applications and are necessary aspects to consider in its design.

Student Sequenced Through the Content

A unique and interesting attribute of courseware design is the sequencing of a student through the content material. The issue of a program being nonlinear adds a new dimension to instructional design. Basically, the content is organized in a similar fashion across all media with task-analysis, natural unit sequencing, and chronological progressions being common methods. But how the student progresses through the content can be unique in microcomputer courseware, since a linear path is neither necessary nor desirable. Courseware can be designed to allow the student to choose his or her own sequence and follow a different route on each pass through the content. The design of the courseware program will determine who has control over the sequence—the program, the student, or the teacher. The more that the sequence is fixed by the program in a linear path, the less likely a student can vary the sequence.

An important student option is to be able to exit from an activity and enter a new one, if so desired. A book can be closed, a chapter can be skipped, a workbook page can be ignored. On the microcomputer, it is extremely frustrating to be forced through one activity after another with no choice but to continue. The option then becomes one of turning the machine off and walking away. Bork (1979) claims that the ability of students to control the sequence of material within a learning sequence makes the computer a unique instructional device. The dialogue becomes richer and more interactive when the student can move back and forth between instructional sequences based upon individual needs.

The other option available in courseware design is to have the teacher determine the sequence for a student. The teacher would then be capable of individualizing the sequence for each student. This attribute is another essential way that the courseware can be designed to capitalize on its unique capabilities.

Instructional Text Formatted for Screen Display

It is essential that the instructional text be formatted on the screen for easy reading. The nature of the screen is such that long sentences become difficult to read and understand when viewing the screen. Most video monitors used with microcomputers have a 250-line resolution, or about half the resolution quality we are accustomed to seeing in print materials. Reproducing the hard edges required by alphabets and numbers is therefore a technically difficult task for microcomputers unless they are programmed for rather large print. As the size of the print increases, however, the amount of memory available for other tasks is depleted. Because the print is inherently difficult to read, it is especially important that the formatting and frame display not add to the viewing difficulty. Lines of text must have space between them, long passages should be left to textbooks and magazines, and the screen should be completely clear before each new display, rather than have frames fill up line by line.

Graphics Embedded in the Content

Those graphics that are embedded in the instructional content (or are an integral part of the instruction) contribute to the learning process by presenting a visual model of the information to be learned. Graphic (as opposed to textual) representation of concepts takes advantage of a powerful capability of the microcomputer and is often easier for children to store in their memories. It can facilitate recall by inducing them to actively construct their own mental representation of the information they are trying to learn (Flavell, 1977; Wittrock, 1980).

Graphics used to enhance either the content or the feedback are helpful motivational devices but presume that the presentation is print-oriented. This use of graphics relies predominately on print or numbers to convey ideas, while providing a graphic supplement to enhance the content. A visual representation is not included to facilitate learning or to induce recall. An important consideration is to ensure that the graphics do not distract from the content being presented and interfere with the program's intents.

Bork (1977) claims that graphics are an integral part of an instructional sequence. One of the most valuable contributions of iconic representation in learning is the building of student intuition or insight. In trying to develop problem-solving skills, graphical visualization becomes an extremely important component. A common student difficulty is a failure to generate a "map" or series of maps of possible processes and directions in solving a problem. A diagram, flowchart, or visual representation of the problem becomes imperative. Finally, the motivational aspects of graphics cannot be overlooked.

Graphics Used Appropriately

In considering the whole issue of graphics, it must be admitted that for the most part humans are visually illiterate and not very skillful in the use of visual images in learning. We live in a highly verbal society, whereby our educational system is based upon verbal and written communications. Very little information is conveyed through visual representation (Bork, 1977). Therefore, it is not surprising how little is known about iconic visualization in the learning process. Due to this illiteracy, it must be admitted that it is very difficult to evaluate whether graphics are, in fact, used appropriately.

However, there are certain features which can be considered when evaluating the quality of the graphics in a software program.

- Are the graphics relevant for the user's age and ability level?
- Do the graphics avoid being distracting?
- Do they support the program's intents or detract from the instructional content?
- Are the graphics clear?
- Do the graphics add interest?
- Are the graphics in color?

These questions should help to determine whether the graphics will enhance the program's overall instructional quality and if they are used appropriately within a context we can judge.

Cues and/or Prompts Used

Just as a tutor can employ various techniques to help stimulate a student's recall, so can a good courseware program insure that cues for retrieval are available to the learner. These "cues" or "prompts" usually jog the memory, and this contact gives rise to the feeling of recognition (Flavell, 1977; Gagné, 1977).

To adequately cue correct responses, the courseware program should respond in an interactive way. When new concepts or terms are being introduced, the program should maximize the number of cues to insure a correct response. In contrast, when a student knows the subject well, he or she can respond correctly without cues. The technical term for withdrawing the cues is "fading." This should be done in a gradual process, because if cues are faded too rapidly, the student will make many incorrect answers (Markle, Eigen, and Komoski, 1961). For example, if a student is trying to spell "trade," the first prompt may be "_rade," the next one "_ _ ade," the next one "_ _ _de," and the last one "_ _ _ _ _e."

This capability is one that the microcomputer can utilize based upon individual performance. It is a unique, interactive feature that can be employed to facilitate learning.

Action Occurs on the Screen

There is very little research in this area, but an essential attribute of any courseware program is to see some kind of graphic movement on the screen other than just words or numbers. The graphic capability of the microcomputer allows for a wide range of animated movement. Unfortunately, this aspect is often ignored in educational settings, resulting in boring, stagnant programs. Anyone who has walked into an electronic arcade recently knows the exciting capabilities of the microcomputer in terms of graphics, color, and movement.

User Control Granted to Learner

Perhaps user control is one of the greatest capabilities of the microcomputer. The whole notion of interactivity is realized when courseware allows the student to weave his or her own educational environment. This can be done by granting the learner control over certain aspects of the program. The following questions will help to determine the extent to which the user can control the program.

- Can the student alter the rate of presentation so that he or she can control the text rolling on the screen or the rate that problems are presented?
- Can the student exit the program at any time?
- Can the student determine where entry into the program must begin?
- Can the student review instructions at any time?
- Are options available in the program such as "HELP" or "HINT"?
- Can the student redesign any parameters of the program, such as change the number of examples provided, determine when a test is taken, or specify how many problems are to be completed?

Computer-Managed Instruction Employed

If a courseware program is to utilize the full capabilities of the microcomputer effectively, it should have a sophisticated management system. Individualized instruction traditionally has been difficult to institute, due to the labor-intensive tasks involved. Because of this, educators are starting to become aware of computer-managed instruction (CMI) as a means of alleviating the time-consuming demands of managing individualized instruction.

By managing the student's performance, the microcomputer should: (1) collect and store data from the learning situation; (2) diagnose each student's status based upon performance; (3) prescribe activities to the student by moving a student forward to the next unit or assigning a student activities to eliminate a deficiency (commonly known as branching); and (4) provide reports on student progress (Baker, 1981).

An important feature of the management system is its branching capabilities. Virtually every subject matter can be taught at several levels of difficulty, and the computer has the capability to branch to the level of program best suited to the student based upon previous performance (Spitler and Corgan, 1979). The potential uses for branching are multitudinous, and given the greater individualization via recycling and enrichment that this capability allows, branching should be a commonly used feature in all software programs.

In evaluating a program's branching capabilities, an important aspect to be aware of is when the program "loops back" to a set sequence for review. Often the producer claims that the program is branching, when in fact a simple loop-back procedure is being utilized. Actual branching occurs when a student moves to a different instructional sequence based upon his or her responses and individual needs.

Another important consideration when evaluating a management system is the technical ease of using the program. If the courseware program is cumbersome and difficult for the teacher to operate due to an elaborate management system, the primary purpose of the system is defeated—to alleviate the teacher of time-consuming tasks when individualizing instruction.

Feedback Used Appropriately

Research on feedback has shown that the main function of feedback is not to strengthen or reinforce correct responses but to locate errors and provide information so that the learner can correct them in his or her mind. Providing only positive feedback is less facilitative during acquisition of instruction than giving negative feedback (Anderson *et al.*, 1972; Barringer and Gholson, 1979; Hartley and Lovell, 1978; Kulhavy, 1977). Therefore, research recommends that feedback should be used primarily after wrong responses. It is not necessary after most correct answers. In addition, behavioral psychologists have shown that an intermittent or partial reinforcement schedule maintains the highest rate of learning. Not only is it unnecessary to reinforce each response, it is preferable not to do so (Homme and Tosti, 1971).

Appropriate use of feedback is an important issue in evaluating courseware. The following should be considered:

1. Feedback should be non-threatening and not "yell" at the student for a wrong answer. A "friendly" courseware program is one that is interminably patient without penalizing the student.
2. Feedback should be immediate and inform the student whether the answer is correct or incorrect and what the correct response is. It is also helpful to explain why the response is wrong.
3. Feedback should not over-reinforce correct responses with elaborate praise every time the student answers correctly. For very young children or slower learners, an abundance of positive feedback might be necessary at first, but an option should be available to fade out the constant feedback.
4. Feedback should remediate. A tutorial or explanation is often necessary to help correct the student's answers. The student should also have some way of matching his or her incorrect answer against the correct response.
5. Feedback should not reinforce wrong answers by providing a more rewarding graphic for a wrong response than for a correct response.
6. Feedback should be relevant for the user's age and level.

Records Stored on Magnetic Devices for Future Retrieval

The microcomputer can interface with two forms of electronic storage devices—magnetic cassette tapes, which use an audio tape recorder, and digital magnetic disks, ranging from small floppy disks to large hard disks used in one or more disk drives. The advantages of the magnetic disks far outweigh the higher price of a disk drive over the audiocassette recorder. The disk allows cumulative records for each student to be stored and immediately accessed at a future time. A student can complete a lesson, turn the machine off, and, later in the day or week, the teacher can quickly retrieve the student's records. Storing permanent records on cassettes is a much slower and less efficient process. Therefore, maintenance of records on cassettes is rarely done and usually when the machine is turned off, all records are lost. The increased ability of the disk to store much more information and to access it much more quickly adds to the quality and feasibility of implementing computer-managed instruction on the microcomputer.

Content Designed to Be Altered

An option available to courseware programs on the microcomputer is to have the content designed to be altered by the teacher or student adding to it. Some programs take advantage of this feature by having the teacher and/or student create his or her own word lists and spelling lists, for example, which are then stored on the disk and become part of the program. This flexibility allows the program to be adapted in many different types of situations and can be easily integrated into the curriculum. This feature is not widely utilized but has great potential for educational purposes.

Random Generation Used

A simple but extremely useful attribute that can be utilized in courseware programs is the random generator. This built-in feature will generate a universe of items at random so that no one set of exercises, words, or items will ever appear in the same order the next time they are generated. A simple way to see if a program is using random generation is to go through a few exercises in a lesson, note the order of the problems, turn the machine off, and start the same lesson again. If the problems are generated in a different order, you know that random generation is being used. If the same exact problems appear, random generation is not being used. This feature is a very useful and helpful device that should be utilized in courseware programs, especially those that are of drill and practice application.

Packaging Designed for Component Parts

Although good packaging is essential to all instructional materials, microcomputer courseware contains some unique aspects which should be examined. First, it is important to consider how the component parts (disks and/or cassettes) can be packaged so that they do not fall out of the container. Second, the disks and/or cassettes must be packaged so that they can be distributed among many teachers, being that the large programs are designed to be used across grade levels. The packaging should take this into account and be designed in such a way that several copies of the Teacher's Manual are provided. All disks and cassettes should be clearly labeled according to subject area, lesson numbers, and grade-levels.

Teacher's Manual and Student Manual Provided

The Teacher's Manual should contain: (a) sufficient information to teach the teacher how to technically manipulate the program; (b) classroom strategies for using the program; and (c) specific instructional activities to integrate the program into the curriculum. Also needed is a Student Manual to help the student access and technically manipulate the program. To alleviate fears and resistance, both guides should be extremely well organized, clearly stated, and provide a step-by-step approach.

Technical Design Used

An important attribute to consider is the technical design of the program.

- Does the design allow for quick response time so that a user can input responses quickly and not be held back by the software?
- Does the design allow for quick loading time so a student is not continually waiting for a segment of the program to be loaded from the disk to the computer's memory? If a student is left sitting idle at a terminal for many minutes while the disk drives whir and a message on the screen says "LOADING . . . .," a teacher can soon be in trouble (not to mention the equipment and the disks).

Summary

Microcomputer courseware ultimately will determine the success or failure of microcomputers in the classroom. There is a paramount need to develop not just "minimal standards" but standards that will act as guidelines to help producers, evaluators, and consumers determine what quality software *is*.

The attributes that have been discussed pinpoint those criteria that should be included in the design of instruction for the microcomputer. They could become a potential checklist for producers, developers, or evaluators of courseware, and they help to isolate certain unique features of the microcomputer which should be utilized to enhance interactivity in the design of computer-based instruction. These criteria offer a set of standards by which instructional software can be judged; and, if used in a formative way, they could increase the quality of the courseware being produced. ☐

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Student Name: ____________________ Courseware Program: ________________________

Grade: __________________________ Section/Level Used: ________________________

Age: ___________________________ Date: _____________________________________

STUDENT OBSERVATION OF MICROCOMPUTER COURSEWARE USE

I. Physical Environment Information

Describe physical layout of the classroom including: where the computers are located; where the students are seated; and where the teacher(s) is (are) located. Use the following symbols:

/C/= Computer /_/= Desks X= Student T=Teacher ▯= Blackboard

Comments: ________________________________

____

____

____

____

____

II. Ease of Use of Courseware Program

Student Checklist — Yes — Somewhat — No

1. Student has a problem manipulating the keyboard. ___ ______ ___

Comments: ________________________________

____

2. Program holds student attention. ___ ______ ___

Comments: ________________________________

____

3. Student has a problem following program's directions. ___ ______ ___

Comments: ________________________________

____

	Yes	Somewhat	No
4. Student is self-sufficient and is not asking teacher many questions after initial introduction.	___	_____	___
5. Student has a problem reading the screen.	___	_____	___

Comments: ____

____

IV. Student Questionnaire

1. Did you like this program? ______ Why or why not? ______________________________

____

2. Did you learn anything from it? ______ What did you learn (or why didn't you learn)? ______________________________

____

3. Could you follow the instructions all the time? ______________________________

____

4. Would you want to use this program again? ______ Why or why not? ______________

____

5. Did you like using the microcomputer? ______ Why or why not? ______________

____

6. What did you think of the graphics/pictures (if there were any)? ______________

____

7. Did you find the screen easy to read? ______________________________

____

III. Teacher Questionnaire

1. What type of student is this? ______________________________

2. Does he/she do well in __________ subject area? ______________________________

3. What are his/her strengths? ______________________________

Weaknesses? ______________________________

Appendix H

Handouts to Florida Presentation

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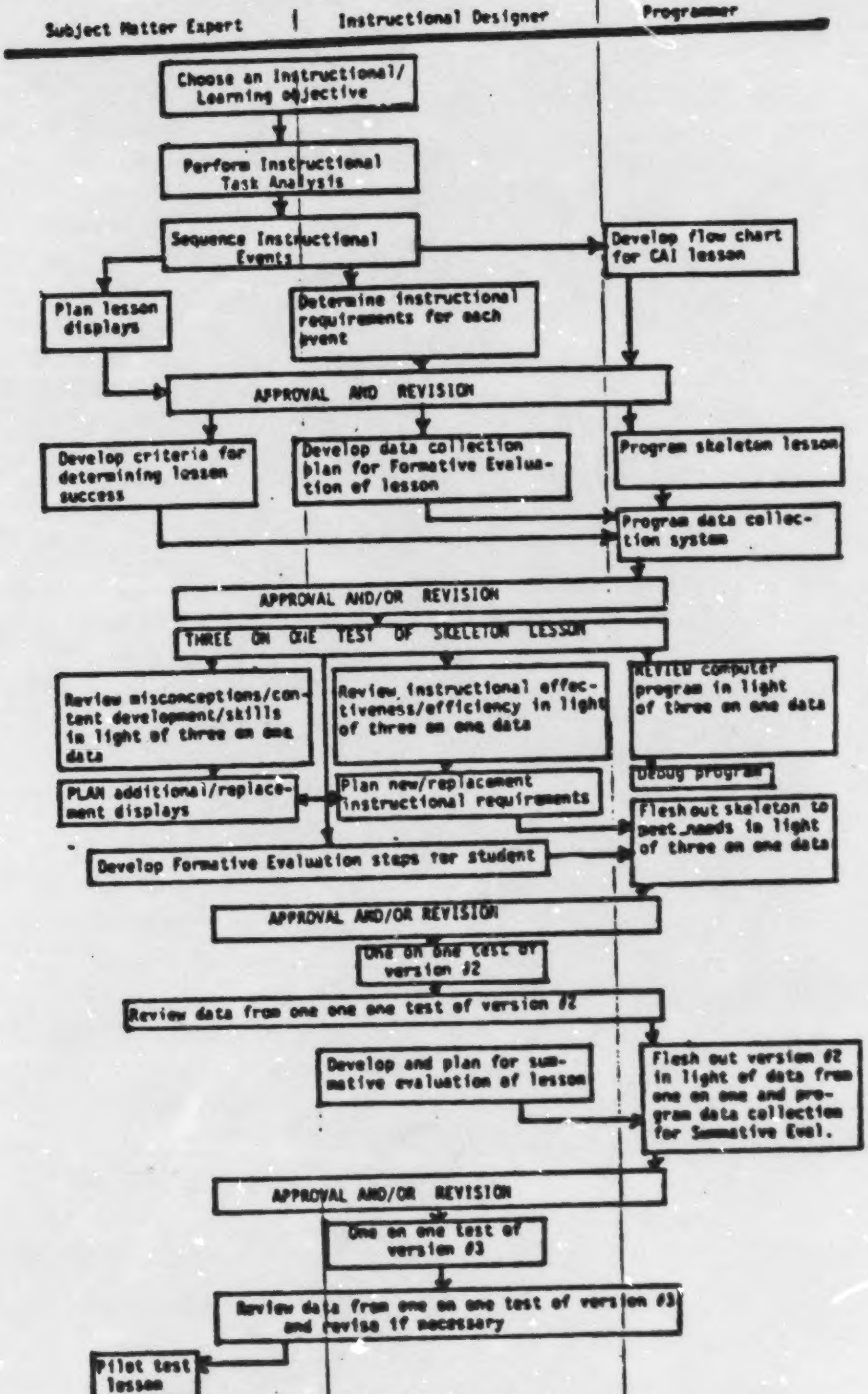
Figure 4

DESIGNING CAI


Subject Matter Expert
Instructional Designer
Programmer
Choose an Instructional/ Learning objective
Perform Instructional Task Analysis
Sequence Instructional Events
Develop flow chart for CAI lesson
Plan lesson displays
Determine instructional requirements for each event
APPROVAL AND REVISION
Develop criteria for determining lesson success
Develop data collection plan for Formative Evaluation of lesson
Program skeleton lesson
Program data collection system
APPROVAL AND/OR REVISION
THREE ON ONE TEST OF SKELETON LESSON
Review misconceptions/content development/skills in light of three on one data
Review instructional effectiveness/efficiency in light of three on one data
REVIEW computer program in light of three on one data
Debug program
PLAN additional/replacement displays
Plan new/replacement instructional requirements
Flesh out skeleton to meet needs in light of three on one data
Develop Formative Evaluation steps for student
APPROVAL AND/OR REVISION
One on one test of version #2
Review data from one one one test of version #2
Develop and plan for summative evaluation of lesson
Flesh out version #2 in light of data from one on one and program data collection for Summative Eval.
APPROVAL AND/OR REVISION
One on one test of version #3
Review data from one on one test of version #3 and revise if necessary
Pilot test lesson
Review data from pilot test and revise if necessary

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COMPUTER LITERACIES
Changing Perspectives

by

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A very few years have propelled us from early computer applications of rapid calculations to meet specific (usually scientific) needs, through wider applications where the "high priests" of data processing applied their specialized knowledge of coded language to serve a growing number of societal and business needs, to the present society that is becoming saturated with computers that are growing easier to use in all facets of our lives.

We all experience daily interaction with operations of the microcomputer chip in banking, shopping, charging, driving, boating, cooking, mailing, voting, reading, ordering, being paid, being examined, being entertained, playing games, etc., etc. The inundation of computer functions is accelerating so rapidly that a single definition for what many are calling the fourth R, "computer literacy," is literally impossible. David Moursund, Editor of The Computing Teacher magazine says that, "Computers are an everyday working tool like reading and writing." He also stresses that "computer literacy includes an understanding of how computers aid problem solving in any discipline."

As educators try to catch up with societal uses of computers, it should become apparent that "computer literacy" need not and should not be taught as a separate isolated topic, but rather as an integral part of each course, both as an instructional tool and as a tool to be applied by students to all disciplines. Students should be taught to use the computer-as-a-tool in art, music, social studies, health, foreign language, science, journalism, business, etc., etc. We educators must not only learn more about how we can use the computer to save time on laborious record keeping, but also how it can best be used in teaching, testing, diagnosing student needs, remediating, planning, budgeting, assessing information (from local, state, and national data bases), writing reports, etc., etc.

As we learn more about the effects of computers in education and in society, our goals and objectives will probably change. The following outline is an attempt to define some computer literacies for a variety of populations within the present school setting. The settings, the populations, and the definitions should be considered temporal as time and technology change. Life long learning and continuing education must be terms we educators apply to ourselves as well as to our students.

Computer Literacy for Elementary Students:

1. Operate a microcomputer for learning (turn on/load software/run program/ interact with instruction).
2. Use diagnostic computer programs for self-evaluation of basic skill competencies.
3. Use individual and group computer games which motivate and teach basic skill
4. Submit test answers and homework in an appropriate format to be entered directly into the computer for grading and analysis.
5. Understand simple applications and limitations of computers.
6. Be able to discern computer applications in society.
7. Work in teams to lay out and try computer solutions to simulated problems.
8. Access subject matter information from data disks.

Computer Literacy for Middle School Students:

All eight of the elementary student competencies and

9. Personal needs applications: nutrition, health, life style analysis, special information programs (games, sports, hobbies).
10. Home needs applications: monitoring (appliances, air, water, etc.), inventory, maintenance, loans, checking, etc.
11. Career Awareness: interest, aptitude, preparation, changing trends, selection.
12. Computer uses for training, retraining, up-dating.
13. Access information electronically for each course from local and/or wider data bases.
14. Develop attitudes and ethics concerning computer applications.
15. Be able to discern both positive implications and potential problems of computers in society.

Computer Literacy for High School Students:

All of the previous competencies and

16. Use of the computer-as-a-tool in the special applications associated with each course (fine arts, business, home economics, industrial arts, vocational, economics, communications, foriegn language, social studies, science, mathematics, sports, etc.
17. Career selection.
18. Selection of post secondary education opportunities.
19. Access network data bases for information.
20. Computer science courses for some.
21. Advanced applications of the computer-as-a-tool in specific subject areas for some.

*Note: Evening classes for interested parents of students at each of the above levels would enhance these suggested literacies.

Computer Literacy for School Administrators:

1. Understand a systems approach to school management.
2. Be conversant with key terms and techniques of instructional computing.
3. Understand school applications and limitations of computers (word processing, CAI, instructional design for CAI, CMI, computer-as-a-tool, career selection, continuing education).
4. Be able to access school data bases by terminal or microcomputer (user friendly query programs are available).
5. Apply budget analysis using electronic spread sheets (e.g., Visicalc, Supercalc, etc
6. Know procedures for evaluation and selection of hardware (including compatibility of peripherals).
8. Be able to access and interpret data from electronic network data bases.

Computer Literacy for School Clerical Staff:

1. Use of word processor.
2. Use of electronic spread sheets for keeping track of budgets, inventory, etc.
3. Operate test scoring machines in conjunction with microcomputers and/or main frame terminals.
4. Be able to access data base information.
5. Be able to make back-up copies of data disks.
6. Make printed copies of electronically stored information.

Computer Literacy for Teachers and Aides:

1. Be conversant with terms and techniques of instructional computing.
2. Know how to use the microcomputer and peripheral devices to score, analyze, store, and retrieve test data.
3. Understand the various team responsibilities for designing computer assisted instruction programs for students (designer, programmer, content expert).
4. Be aware of and where possible be able to use the computer as a tool within the teacher's specific subject discipline.
5. Be able to maintain currency in computer applications in the teacher's specific subject discipline.
6. Be aware of the impact of the computer on society (individuals and collectively).
7. Analyze a simple problem and determine a set of systematic steps leading to a solution.
8. Write a simple computer program to follow the solution steps of number 8.

Computer Literacy for Computer Resource Teachers:

All of the eight competencies listed above

9. Be able to write computer programs in at least one computer language.
10. Interpret and trouble shoot microcomputer program errors.
11. Design both useable computer assisted instruction and applicable computer managed instruction.
12. Give evidence of skill in selection of appropriate computer software.
13. Train teachers to design and apply activities for their classes in which the computer is used as a tool within the subject discipline of a course.
14. Coordinate information searches done on a network data base for the school.

STAFF DEVELOPMENT: Instructional Computing

Through the efforts of several individuals and offices, many (maybe as many as 50%) teachers and administrative staff are "computer literate". That is, they can describe the operation of a computer, they have used a computer, and have probably written and run a simple computer program. A goal for the next three years is to provide inservice training necessary to ensure computer literacy for all staff by the end of the 1985-86 school year.

Further staff development needs will be identified as the general curriculum is developed and will be provided for by The Teacher Education Center. Some inservice activities presently scheduled are: Designing Computer Based Instruction, a 30 credit workshop offered for ten weeks for 30 participants beginning in January, 1983; and Computer Literacy Seminar, a 6 credit workshop offered monthly for up to 16 participants each session. It is not deemed a requirement that all teachers must become expert in using computers (programming) in order to lead discussions in computer literacy skills. Inservice programs will be conducted to ensure sufficient teacher skills to present effective instruction.

A description of eight planned inservice activities, and a summary table of these and their costs, is contained on the next few pages.

Staff Development

Plan for Instructional Computing Inservice

1. All Teachers, Administrative Staff:

   A one day Computer Literacy Seminar

   Objectives: Instructional Computing Vocabulary
   Some Instructional Computing Applications
   Hands on use of computer

2. All Curriculum Coordinators, Curriculum Supervisors & Directors, School-based Computer Resource Teachers, Curriculum Improvement Committee members:

   A 30 hour course "Evaluating Computer-based Courseware"

   Objectives: Evaluation techniques as applied to computer-based courseware.
   Develop list of "approved" courseware correlated with Curriculum objectives.
   Expertise in operation of computer.

   Prerequisite: Computer Literacy Seminar

3. Principals, Administrators, etc.:

   A 10 hour course "The Computer and Decision Making"

   Objectives: Computer as data manager
   Administrative applications such as: attendance, CMI, scheduling, filing system, spreadsheet

   Prerequisite: Computer Literacy seminar

4. Interested Instructional and Curriculum Staff:

   A 30 hour course "Designing Computer Based Instruction"

   Objectives: Use System Approach to designing, producing and documenting a CAI lesson

   Prerequisite: Expertise in programming in BASIC
   Computer Literacy Seminar
   Evaluating Computer Based Courseware

5. Interested Staff:

2 - 30 hour courses "The BASIC Language"

Objectives: "BASIC I" -- Use 10 common BASIC commands
Write 5 simple programs

Prerequisite: Computer Literacy Seminar

Objectives: "BASIC II" -- Use BASIC commands required to develop CAI courseware
Write 5 moderate difficult programs

Prerequisite: "BASIC Language I" or equivalent.

6. Interested Staff:

30 hour courses in LOGO, PASCAL, etc.

7. Teachers of Computer Literacy in the high schools

30 hour course "Teaching Computer Literacy"

Objectives: Use of the computer to solve problems (developing algorithms)
Use computer programs
Write computer programs
Analyse computer applications
Examine Social Issues related to computers
Use computer concepts and terminology
Teach with and about computers

Prerequisite: Computer Literacy Seminar

8. Teachers and Administrators:

36 hour course "Managing Computer Resources"

Objectives: Management of Computers in a School Setting
Use of Computers in CAI, CMI, CSLA, CAM
Ensuring Privacy and Security
Writing and Use of Computer Programs
How to be Responsible for School-based Teacher Inservice about Computers

9. ECIA Chapter I and State Compensatory Education Teachers; (includes many local staff)

3 Days (18-20 hours)

Objectives: Train ECIA/SCE/Local teachers to;
a. operate computer equipment,
b. provide diagnosis/prescription,
c. manage instruction, and
d. certify objective accomplishment.

Staff Development: Instructional Computing

Inservice Component	Participants	Length	Prerequisistes	Where/When	Instructor	Est Cost
Computer Literacy Seminar (CLS)	30/component Teachers, Admin. and other appropriate personnel	1 day (6 hours)	None	17 times/ duty day TEC/RHS TEC/SCSC TEC/SHS TEC/BH Elem.	Instructional Computing Supervisor and selected local staff	$18,750
Evaluating Computer Based Corseware (ECBC)	30/component Curriculum people CIC School Computer Resource teachers	10 - 3hr.	CLS	4 times duty day SCSC SHS BH Elem. RHS	Instructional Computing Supervisor and selected local staff	$22,500
The Computer and Decision Making (CDM)	Administrators (Principals!!)	5 - 2 hr. Sessions	CLS	1 time duty day RHS SCSC SHS BH Elem.	Instructional Computing Supervisor and selected local staff	$ 500
Designing Computer Based Instruction (DCBI)	30/Component Instructional and Curriculum Staff (Teachers)	10 - 3 hr. Sessions	CLS ECBC "BASIC" expertise	3 times eve. SCSC SHS BH Elem	Instructional Computing Supervisor and selected local staff	$ 1,800
BASIC I & II	30/component each Interested staff	10 - 3 hr. Sessions (each)	CLS	5 times/eves. SCSC SHS BH Elem. RHS	Instructional Computing Supervisor and selected local staff	$ 3,000
LOGO, PASCAL, etc.	30/component Interested Staff	10 - 3 hr. Sessions	CLS	5 time/eves. SCSC SHS BH Elem. RHS	Instructional Computing Supervisor and selected local staff	$ 3,000
Teaching Computer Literacy in the High School	30/component Teachers of MEMI Computer Literacy	10 - 3 hr. Sessions	CLS	1 time/pre-school SCSC SHS BH elem. RHS	Instructional Computing Supervisor and selected local staff	$ 8,500
Managing Computer Resources	20/component 1 rep./school	36 hours		1 time pre/ post school SCSC RHS SHS	Instructional Computing Supervisor and selected local staff	$10,000

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Appendix I

Handouts to Virginia Presentation

COMPARISON OF S.R.A.
MATH COMPUTATIONAL SCORES
1974-1980

Grade 6	STEA	COMPUTATIONAL
74-75	47%	49%
79-80	49%	65%
Grade 5		
74-75	47%	50%
79-80	52%	68%
Grade 4		
74-75	44%	43%
79-80	53%	74%
Grade 3 *		
74-75	45%	50%
79-80	52%	65%
Grade 2 *		
74-75	38%	53%
79-80	46%	66%

* Total math scores (test does not report computational skills)

RU-1028

SKILLS TEST SUMMARY
(SCHOOL)

SUBJECT - 1 MATHEMATICS
LEVEL - 2
ITEMS/SKILL - 4
CRITERION % - 75

SCHOOL - 300 SHEFFIELD
GRADE - 04
STUDENTS- 52
RUN DATE- 12/09/76

SKILL		ITEMS CORRECT *		STDNTS MEETNG CRT	
NO.	DESCRIPTION	NUMBER	PERCENT	NUMBER	PERCENT
1	ADD SING (REG)	3.8	95.0	50	96.1
2	ADD SING TO 2 DIG RG	3.7	92.5	50	96.1
3	ADD 2 TWO DIG (REG)	3.7	92.5	50	96.1
4	ADD 3 TWO DIG (REG)	3.7	92.5	50	96.1
5	SUB 2 SING DIG	3.7	92.5	49	94.2
6	SUB 1 DIG FROM 2 DIG	3.3	82.5	42	80.7
7	SUB 2 DIG FROM 2 DIG	3.6	90.0	48	92.3
8	SUB 2 DIG FROM 2 DIG	3.0	75.0	38	73.0
9	SUB 1 DIG FROM 2 DIG	3.1	77.5	41	78.8
10	SUB 2 DIG FROM 3 DIG	2.7	67.5	34	65.3
11	MUL SIN DIG X SIN DG	3.6	90.0	50	96.1
12	MUL SIN DIG X SIN DG	2.6	65.0	35	67.3
13	MULT SING DIG X 2 DG	3.5	87.5	44	84.6
14	MULT SING DIG X ZERO	3.3	82.5	45	86.5
15	MULT SIN DIG X 2 DIG	2.6	65.0	32	61.5
16	DIV SIN 1 DIG 1 SIN	3.0	75.0	39	75.0
17	DIV COMB THRU 50/5	2.9	72.5	35	67.3
18	DIV COMB THRU 81/9	2.2	55.0	27	51.9
19	FRACT ADD LIKE DEM	1.5	37.5	20	38.4
20	FRACT SUB LIKE DEM	1.7	42.5	22	42.3
	TOTALS	61.2	76.5	9	17.3

* THESE SCORES SHOULD BE INTERPRETED AS MEANS OR AVERAGES